Taunton Deane Borough Council

Executive – 9 June 2016

Delivery of Electronic Car Park Signage and Pay on Foot Systems to Key Car Parks

This matter is the responsibility of Councillor Roger Habgood

Report Author: Ian Timms, Assistant Director - Business Development

1 Executive Summary

1.1 This report provides a new Taunton Town Centre Signing Strategy which introduces a new approach to signage in Taunton. This will deliver a comprehensive renewal and improvement of existing signage. This is attached as Appendix A of this report.

1.2 As an element of that approach a detailed proposition has been provided around the installation of electronic parking signage (Variable Message Signage, VMS). These will be provided at key decision points on the wider highways network which will assist customers in locating and finding car parks.

This signage is complemented by the installation of pay on foot systems to key car parks which will contribute to an improving the experience of visitors and shoppers when using Council operated car parks in the town. These two elements are described in detail within Appendix B of this report.

This overall approach will deliver significant improvements to the way that the council guides customers to, and manages key shopper car parks in Taunton. It will also have benefits for the management of traffic flow around the town.

1.3 The report gives detailed indicative costings to support these propositions which are based on knowledge of the market and are intended to enable the council to earmark appropriate sums to deliver the project.

1.4 Members are asked to support the proposition and allocate the budget necessary to enable the procurement and installation of these systems to progress. This proposition will be financed from New Homes Bonus monies. The detailed financing and options are considered in appendices C and D.

2 Recommendations

2.1 The Executive recommends to Full Council that they support the allocation of £1,200,000 to implement the proposed scheme, as detailed in the report, which would deliver key elements of the Corporate Strategy.

3 Risk Assessment

Risk Matrix

Description	Likelihood	Impact	Overall
The council is unable to identify appropriate budgets to deliver the proposition	3	4	12
The council`s financial approach is outlined in the finance section of this report	2	2	4
The proposal is not delivered onto the Highways network or installed into car parks in a timely manner due to SCC having a wide range of conflicting priorities.	4	4	16
A contracted timescale will be agreed with SCC Highways *The pay on foot element will have clear contracted timescales*	3	3	9

Risk Scoring Matrix

Likelihood	5	Almost Certain	Low (5)	Medium (10)	High (15)	Very High (20)	Very High (25)
	4	Likely	Low (4)	Medium (8)	Medium (12)	High (16)	Very High (20)
	3	Possible	Low (3)	Low (6)	Medium (9)	Medium (12)	High (15)
	2	Unlikely	Low (2)	Low (4)	Low (6)	Medium (8)	Medium (10)
	1	Rare	Low (1)	Low (2)	Low (3)	Low (4)	Low (5)
			1	2	3	4	5
			Negligible	Minor	Moderate	Major	Catastrophic
			Impact				

4 Background and Full details of the Report

4.1 This proposal has been developed in close collaboration with Somerset County Council and their principal contractor Parsons Brinkerhoff (PB) over the past 6-9 months. This is a detailed proposition which has fully examined a range of options to produce this package of measures. It has three key components which are in essence:

- A comprehensive signage package for Taunton incorporating electronic parking signage (VMS) which will improve the flow of traffic to key car parks, create an early warning system for events and enable improved traffic flow management.

- Improvements to seven key car parks by installation of pay on foot systems which enables customers to pay on exit from car parks. This would replace the current pay and display approach used in these car parks.

- Connecting the electronic signage and the pay on foot systems together for key car parks together to create a comprehensive and informative wayfinding system for motorists. This will provide real time data on space availability at key points on the highway network.

4.2 The report contains two significant appendices. Appendix A is a comprehensive signing strategy which was commissioned to examine how effective the existing signage package is in serving the needs of Taunton. The strategy focuses on three significant component parts of the network which are mentioned in the council's corporate strategy. These components are the park and ride provision, car park signage and tourist signage which are colloquially known as brown signs. Clearly this is a network maintained and managed by SCC. However introducing new electronic wayfinding to TDBC owned car parks and changes to the associated signage package have been instigated by TDBC. The council is therefore the major funder of this infrastructure.

4.3 The proposals around signage deliver on three key objectives of the Council`s Corporate Strategy as outlined in section 5 of this report. The proposals are a defined project within the Council`s growth programme which supports delivery of the Council`s growth agenda.

4.4 The second significant appendix B comprehensively examines the provision of electronic signage and the improvements created by installing pay on foot parking systems at seven key car parks. The pay on foot costs are broken down by car park within the report. In this initial phase the proposal is to deliver these seven key car parks and link them to the electronic signage through use of traffic management software.

4.5 It is expected that further car parks will be improved by installing pay of foot systems over the next few years but these are not the subject of this report. These will be dealt with through future budget allocations.

4.6 The broad benefits of this investment are outlined in Section 10 of Appendix B. These

include:-

- Reduced time in finding a space which is referenced by Department of Transport guidance creating a reduction in stress for drivers suggests that this time is cut in half. The signage reduces unnecessary circulation to car parks and minimises queuing at car parks through influencing driver behaviour.

- Pay on foot improves user experience as it removes the time limitation created by pay and display car parks. The inference is that people then spend more money into the economy whilst shopping. This reduces stress for shoppers and will improve the visitor experience to Taunton.

- The installation of these systems has seen revenue rise in other towns generated by the car parks. This is in the order of 15 -20 % so will enable the council to invest further in car park improvements.

4.7 This proposal clearly represents a significant investment for Taunton and is also one which is supported widely by the business community. The Taunton chamber of commerce confirm that their members have been pressing for these improvements for the past five years. Destination Taunton which is an umbrella organisation for businesses also recently identified these improvements as one of its top priorities.

4.8 The aim would be to complete delivery of this investment by the end of 2017. This in effect would mean that this will be delivered within 12 -18 months of this decision.

5 Links to Corporate Aims / Priorities

5.1 The installation of Electronic parking signs will deliver key theme 3c of the Corporate Strategy. *Make finding a car parking space in Taunton quicker and easier through the provision of electronic parking signs*

5.2 The signage will also address key theme 3b *Work with others to improve wayfinding within the Deane through improved signage and support improved signage at the entry points from the Motorway into the Deane which promotes the area as a place to visit.*

5.3 In addition the Signage contributes to delivery of key theme 2d as the signage will be used to promote events in the town centre locations combined with a tidier and improved brown sign network that assists motorists in finding these locations. *Promote the Taunton town centre and the existing gems such as the Museum of Somerset and Castle Green.*

6 Finance / Resource Implications

6.1 The proposals have a total maximum indicative cost of £1,057,120 as outlined on page 41 of Appendix B. This cost is an estimate based on soft market testing of providing VMS and Pay on Foot Systems. This combines with known costs around civil works needed at car parks and on the Highways network. The estimate is therefore as accurate as is possible without entering a procurement phase.

6.2 In order to cater for any variation in this phase a contingency is requested creating a total budget demand of £1.2 million.

6.3 This figure is a maximum spend figure and takes no account at the time of writing this report of any contribution that may be gained from other parties for the proposal. This is subject to further discussion and negotiation. Signage related to the motorway network may also be incorporated with the Junction 25 signage package which would be financed as part of growth deal proposals. This cost estimate therefore is likely to be a worst case scenario for this project and the allocation is requested on that basis.

The cost is broken into four constituent parts:-

1. Variable Message Signage package including installation;
2. Pay on foot at seven car parks;
3. Control Room software to link 1 and 2; and
4. Associated signage package with Brown signs to support 1 and 2.

6.4 All elements are initially capital sums as they are associated with project delivery. In terms of item 3 it should be noted that there is an ongoing revenue cost of operating the systems which will require budgetary provision. In terms of this revenue item monies were identified in the Council`s recently adopted car park charging report creating this provision on an annual basis. Appendix B in examining possible income rises suggests a 15 % rise may occur from introduction of these systems. The revenue to operate the system should therefore be self- financing.

7. Finance Comments

7.1 It is proposed that the funding budget for this investment will be financed through use of New Homes Bonus (NHB).

7.2 The New Homes Bonus Grant (NHB) is non-ring fenced which means the Council is free to decide on its use for additional funding towards the Council's key corporate priority of Growth and Regeneration. GF Revenue Estimates – para 5.15/5.16/5.17 (Exec 5 Feb 2015).

7.3 The strategic principle set out in the Budget Approach (Corporate Scrutiny 19 September 2013) is that all "unallocated" NHB will be set aside for investment in Growth and Regeneration. This approach is re-enforced by the incorporation of the principle in the framework of "High Level Principles" for future budget setting (MTFP update Sept 2014).

7.4 The Taunton Rethink established a fresh concept for the regeneration of Town Centre sites. The investment as outlined will enhance this offering by ensuring infrastructure is in place which complements and keeps apace with this regeneration and provides an enhanced gateway to Taunton town centre. The document can be accessed via the following web link: http://www.taunton.uk.com/regeneration/taunton-rethink.htm.

7.5 Major Transport Schemes is a Growth spend category reflecting the priorities established in the Taunton Growth Prospectus and is aligned with the relevant plans and priorities of key partners, such as Somerset County Council, Environment Agency, Local Enterprise Partnership and the business community. Having such funds allocated enables the Council to respond quickly to commercial funding opportunities to support growth, which in turn facilitates the realisation of Taunton's economic vision and key economic benefits, such as: new homes, new enterprises, new and better jobs and a vibrant town centre. Funding towards Growth and Regeneration Priorities (Executive 3 December 2015).

7.6 Transport infrastructure is an important enabler of growth and this allocation will support the delivery of the vision and enable the Council to support investment in improving parking provision, access and signage in Taunton Town Centre and in turn bring economic benefit.

7.7 Contribution of £200,000 (Highways and Transport Capacity) is made from 2014/2015 NHB allocation to support accelerating delivery of growth ambitions. Para 2 (Full Council 22/7/14) and has enabled the commissioning of the professional reports to outline the required infrastructure outlay as noted in Appendix B of this report.

8. Capital Costs and Funding

8.1 The proposals and costs associated to complete the capital works are outlined in the report prepared by PB (Appendix B Car Park Feasibility Study 2v2 Page 32 8.1/8.2) The estimated capital costs are therefore summarised as follows:-

	£
Total costing	
VMS	486,283
POF	555,927
Fees, Contingency	157,790
Total Capital Budget Requirement	**1,200,000**

8.2 Financial modelling has been undertaken to assess the proposed funding from both an affordability and Cash Flow perspective. (Appendix C).

If it is felt that to borrow the capital required to secure the funding is an appropriate decision, then a 15 year term has been assumed for the purpose of modelling this proposal and funding through borrowing from the Public Works Loans Board (PWLB). The affordability assessment therefore takes into account the cost of repayment of the debt and interest. (Appendix D outlines various options of the use of funding from PWLB sources and repayment options thereon over 10, 15 and 25 years).

8.3 As at 17 May 2016, the potential borrowing rate is 2.58% for a 25 year loan. To allow for an estimated 15 year life of product the financial modelling has used a rate of 2.03%.

8.4 It is assumed the borrowing will be taken as a fixed-rate Equal Instalment of Principal (EIP) loan, which means that the capital repayment is a fixed amount each year but the interest costs reduces year on year as the loan principal balance reduces.

9 Legal Implications

In order to ensure timely delivery of the proposed signage package onto the Highways network we intend to enter into a contract or binding agreement with Somerset County Council.

Management of the linkage between the signage and the pay on foot systems will also require a formal contract with SCC to formalise.

10 Environmental Impact Implications

None identified in association with this report.

11 Safeguarding and/or Community Safety Implications

No implications associated with the report.

12 Equality and Diversity Implications

There are no issues associated with this report. It should be noted that all of the planned installations will need to meet legal requirements. This will be dealt with through the procurement process to ensure that legislative demands are addressed.

13 Social Value Implications

None identified in association with this report.

14 Partnership Implications

The proposition involves working in partnership with Somerset County Council to deliver electronic parking signage onto the Highways network. This will require close cooperation with SCC and its contractors to deliver the signage within an agreed timescale.

In order to operate the link between the electronic signage and the pay on foot systems there will be an ongoing partnership with SCC in terms of traffic management which

will have a revenue implication for TDBC which is outline above.

The proposed changes will need to be considered as an element of the NSL parking enforcement contract which is currently entering a review.

15 Health and Wellbeing Implications

There are no specific issues associated with this report.

16 Asset Management Implications

The installation of pay of foot systems to key car parks will involve work to improve those assets. This will include installing new barriers, different pay machines and carrying out some civil work. The car parks and civil contingencies manager is part of the delivery team and so we will synchronise this work with other planned improvements or maintenance works on the car parks affected by this proposition.

17 Consultation Implications

The delivery of these systems supports the corporate strategy which was produced through wide consultation with members.

The installation will improve the highway network and therefore has been developed in close consultation with SCC as outlined above in the partnership section of the report.

18 Scrutiny Comments

To be reported at the meeting.

Democratic Path:

- **Corporate Scrutiny Committee – Yes**
- **Executive – Yes**
- **Full Council – Yes**

List of Appendices

Appendix A	Taunton Town Centre Signing Strategy
Appendix B	Taunton car park Variable Message Feasibility study
Appendix C	Financial Appraisal and cash flow
Appendix D	Public Works Loan Board calculations and options

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TAUNTON TOWN CENTRE SIGNING STRATEGY

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TAUNTON TOWN CENTRE SIGNING STRATEGY

Taunton Deane Borough Council

Confidential

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ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks				
Date	08/04/16	29/04/16	19/05/16	
Prepared by	Lydia Palmer	Lydia Palmer	Lydia Palmer	
Signature				
Checked by				
Signature				
Authorised by	Katherine Bright	Katherine Bright	Katherine Bright	
Signature				
Project number	62102384	62102384	62102384	
Report number	001	001	001	
File reference				

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1 EXECUTIVE SUMMARY

1.1.1 Taunton is currently going through a period of rejuvenation and economic growth with the development of thousands of residential properties. With excellent transport connections Taunton offers an attractive visitor and shopper destination. The planned future development of Taunton will only serve to increase visitor numbers.

1.1.2 A key component of a good visitor experience is appropriate and clear road signing so visitors are directed straight to their destination in a consistent manner and on the most suitable route. This includes signing to the best places to park your car as well as the destinations themselves.

1.1.3 Taunton Deane Borough Council have identified wayfinding and promoting the town centre and existing 'gems' as key aims within their Corporate Strategy 2016-20. Improving signing helps contribute to improving not only business and enterprise but Taunton as a key destination by ensuring it is easier to get around.

1.1.4 This strategy has considered the following:

- Signing to both Park & Ride sites in Taunton;
- Signing to the major town centre car parks (7) including the new car park at the Firepool development;
- Tourist destination signing to key destinations in the town centre but also through signing to Hestercombe Gardens, West Somerset Railway, Butlins and Exmoor.

1.1.5 The signing for the Park & Ride sites is generally good but there is little advanced warning on some approaches to the sites, and therefore these could be improved. This was confirmed by benchmarking the signing against other Park & Ride locations in the UK.

1.1.6 Signing to the town centre car parks is also satisfactory but with the addition of the VMS signs, there are potential improvements to ensure that motorists get clear information all the way to the car park of their choice.

1.1.7 Signing to the tourist destinations, is adequate but it appears that over the years, signing has been added to, meaning some signs are cluttered and some old signing has not been taken down leading to duplication and a proliferation of unnecessary signing.

1.1.8 In parallel to this strategy a VMS Study for the town centre car parks has been developed, see Taunton Car Park VMS Feasibility Study. The signing to the car parks recommended within this strategy has been aligned with the findings and recommendations of the VMS report, including routing and the additional signing required reinforcing the VMS signs. This has been considered in both the car park signing and Park & Ride signing sections, as mentioned above.

1.1.9 The overall indicative costs of the recommendations presented within this report are £24,933. However considering the close ties with the VMS Study, this has been broken down further to identify which signs and hence costs are important as part of the VMS work. Therefore, five options for implementation are discussed.

1.1.10 Overall, it is recommended that signing for the Park & Ride sites and those car parking signs which are essential to the VMS Study are implemented (option 3). Including the final VMS figure of £1,057,120 (which includes pay on foot), the overall signing costs for all essential signing is £1,073,678.

2 INTRODUCTION

2.1.1 Taunton is a historic town situated in the heart of Somerset with a population 65,000. The town is strategically located within close proximity of the M5 that provides good highway links to Bristol and the Midlands to the North and, Exeter and Plymouth further south west. Furthermore, to the north west of the Taunton are the popular holiday destinations of Minehead, Butlins and Exmoor. To the north east of the town lies Bridgwater and to the south east lies Yeovil.

2.1.2 Taunton is currently going through a period of rejuvenation and economic growth with the development of thousands of residential properties. In conjunction with this, a new Northern Inner Distribution Road (NIDR) is being constructed that will improve links from the east to the west of the town centre.

2.1.3 Taking the above into consideration, it is crucial that visitors travelling to or through Taunton are signed on the most appropriate routes to minimise the level of congestion. Therefore, WSP | Parsons Brinckerhoff have been commissioned by Taunton Deane Borough Council (TDBC) to complete a signing strategy to support appropriate route selection and guide motorists to their destination consistently and clearly.

2.1.4 This signing strategy and its recommendations will assist TDBC to address some of the key issues they aim to improve and influence which are set out in their Corporate Strategy 2016-20. These are:

- Key Theme 2 – Business and Enterprise
  - Promote the Taunton town centre and the existing 'gems' such as the Museum of Somerset and Castle Green
- Key Theme 3 – Our Place
  - Improve wayfinding within the Deane through improved signage and support improved signage at the entry points from the motorway into the Deane which promotes the area as a place to visit
  - Make finding a car parking space in Taunton quicker and easier through the provision of electronic parking signs

2.1.5 An initial scoping report was produced to identify a number of objectives that a Taunton Town Centre Routing and Signing Study should consider to ensure that road users, in particular visitors, make best use of the road infrastructure in and around Taunton. It identified that the following should be considered, all of which have been considered in this strategy document:

- The impact of future developments
- Signing to the existing Park & Ride sites
- Signing to the existing car parks
- Impact that road schemes will have on the network
- Potential for Variable Message Signs (VMS)
- Signing to tourist attractions
- The role that Satellite Navigation Systems can have on signing

2.1.6 The overall objective of this strategy is to review existing signing for motorists on the main arterial routes into and around Taunton Town Centre with the aim of providing better information to motorists, improved traffic management and reduced congestion. The focus is on Park & Ride singing, car park signing, and signing to visitor attractions in the town centre. In addition, signing on the strategic routes through Taunton for Hestercombe Gardens, Butlins, West Somerset Railway and Exmoor have been assessed.

2.1.7 Site visits were undertaken to document all of the current Park & Ride, car park and brown tourist information signs. From this inventory it has been possible to identify gaps and recommend improvements in order to achieve the aim of providing better information to motorists and the benefits this then creates, such as reduced congestion.

2.1.8 Alongside this document a further document has been produced which provides discussion around the potential for Variable Message Signs (VMS) in Taunton, see the Taunton Car Park VMS Feasibility Study.

2.1.9 It should be noted that the scope of the project covers a signing strategy for the town centre only and does not consider other relevant factors that may affect driver behaviour such as car park charging and advertisement campaigns.

2.1.10 Following this introduction, this document will be split into the following sections:

- → Park & Ride Signing
- → Car Park Signing
- → Tourist Destination Signing

2.1.11 Each section will review the current signing provision; discuss any relevant research or findings from other areas before providing recommendations on improving signing to ensure better information is provided to motorists.

2.2 STUDY AREA

2.2.1 Taunton is located within close proximity of the M5, Bridgwater, Minehead, Wellington as well as the popular tourist destinations of Exmoor and Butlins. Taunton and its surrounding area is a popular residential location and provides employment to many.

2.2.2 It is considered that the majority of traffic enters Taunton on the:

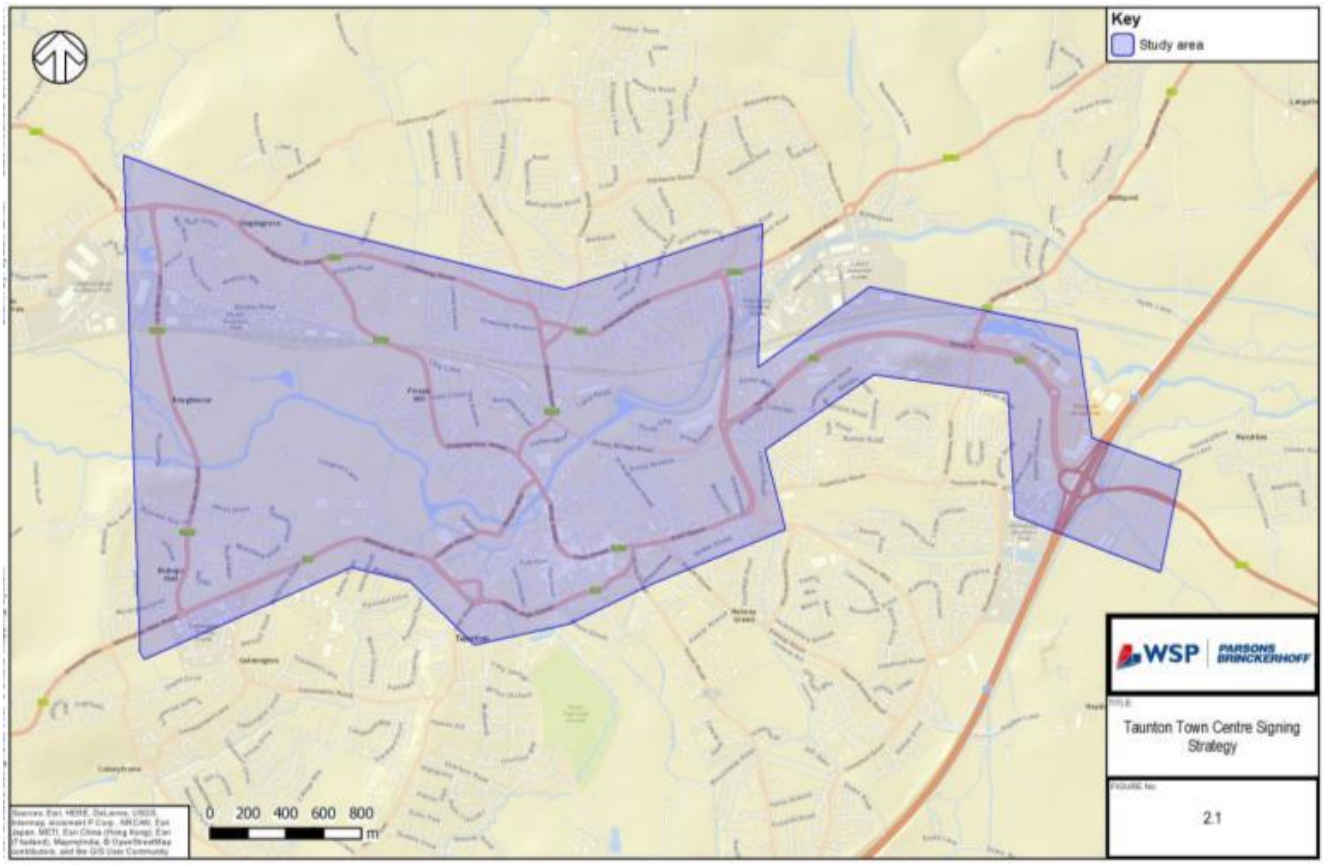
- → A38 from the south west (Wellington and M5 junction 26)
- → A358 from the north and east (M5 junction 25 and Yeovil)

2.2.3 However, it is recognised that significant volume traffic also enters Taunton from the A3259 from Bridgwater and the B3170 from Corfe.

2.2.4 Motorists approaching from the north-west on the A358 are directed onto Silk Mills Road and then the A38 from Wellington. Similarly, motorists approaching from Bridgwater are directed onto the A358.

2.2.5 The scope of the study area is shown in figure 2-1 below. The signing review concentrates on the 4 main arterial routes into Taunton and on the main routes within the town centre. The review of tourist destinations beyond Taunton focuses on the arterial routes within Taunton but also the rural roads on the approach to Hestercombe Gardens.

Figure 2-1: Scope of signing strategy



3 PARK & RIDE SIGNING

3.1.1 The following chapter provides a review of the signing infrastructure for the Park & Ride sites in Taunton while also assessing access from the Park & Ride sites into the town, before proposing improvements to the existing signing. A review of other Park & Ride sites in other locations in the UK is also provided.

3.2 TAUNTON'S PARK & RIDE SITES

3.2.1 There are currently two park and ride sites on the approaches to Taunton both of which serve Taunton Town Centre with a frequency of up to every 10 minutes:

- **Silk Mills Park & Ride** - located to the west of Taunton on the A3065. This provides a service for motorists approaching Taunton from the A38 Wellington, junction 26 of the M5 and the A358 Minehead.
- **Taunton Gateway Park & Ride** - located to the east of Taunton on the A358. This provides a service for motorists approaching Taunton from the M5 junction 25, A38 Bridgwater and the A358 Illminster and Yeovil.

3.2.2 The locations of the Park & Ride sites are shown in figure 3-1 below.

Figure 3-1: Location of Park & Ride sites

3.2.3 Park & Ride facilities can offer improved facilities for motorists by improving journey times to the centre of town, especially during congested times such as peak hours and special event days such as cricket at the County Cricket Ground. They can also remove some of the aggravation of searching for a parking space. In Taunton this is particular true as there is spare capacity at both Park & Ride sites, particularly on Saturdays and at the Gateway site, shown in table 3-1 below. Whereas there is little spare capacity in the town centre car parks[1], see table 4-1.

Table 3-1: Occupancy at Taunton Park & Ride sites

	Silk Mills Park & Ride – capacity 600 cars	Taunton Gateway Park & Ride – capacity 1000 cars
Total Daily Average	405 (68%)	350 (35%)
Weekday Average	452 (75%)	390 (39%)
Saturday Average	168 (28%)	150 (15%)

3.2.4 Table 3-2 below shows the journey times between each of the Park & Ride sites to the centre of Taunton based on journey times provided by Google maps during an afternoon peak.

Table 3-2: Journey times from Park & Ride sites to Taunton town centre

	Silk Mills Park & Ride	Taunton Gateway Park & Ride
Time by car[2]	8 minutes (7 minutes - no traffic)	12 minutes (9 minutes - no traffic)
Time by bus[3]	10 minutes	12 minutes

3.2.5 When traffic is relatively light in Taunton, journey times to the town centre on the Park & Ride bus, is comparable to the journey by car. However, the Park & Ride buses use dedicated bus routes including bus gates so they can offer quicker journey times when there is congestion. It also delivers a more stress free journey into the town as there is no need to worry about finding a parking space or being stuck in traffic.

3.2.6 Parking is free at the Park & Ride sites and the ticket pricing for the bus is good value. The Shopper Special Ticket is £1.70 per car (up to 5 people travelling) and is available 10am to 4pm Monday to Fridays[4] compared to £2.40 in the peak. A weekly ticket, which would be suitable for commuters is £10. Therefore, this offers very good value compared to parking in the town centre, which is often over £5 per day in a commuter car park.

[1] Taunton Car Parking Strategy 2011-2021
[2] Google maps used for a Monday afternoon peak time, 4.30pm
[3] Taunton Park & Ride leaflet http://www.somerset.gov.uk/roads-parking-and-transport/public-transport/taunton-flyer-park-and-ride/
[4] April 2015 prices http://www.somerset.gov.uk/roads-parking-and-transport/public-transport/taunton-flyer-park-and-ride/

3.2.7 With a 10 minute frequency in the peak and every 15 minute off peak and stops at Somerset College and limited stops at Musgrove Park Hospital (last three departures for Silk Mills operate via Musgrove instead of Somerset College), as well as the town centre it provides a viable option to for work, shopping or leisure activities.

3.2.8 Considering the current capacity at each of the sites, the good journey times, frequency and cost on top of the potential for a stress free journey, the Park & Ride sites should be utilised as much as possible for commuters but also visitors to Taunton.

3.2.9 To understand signing to other successful Park & Ride sites across the country, including the level of signing provision as well as the type of signing, a benchmarking exercise was undertaken; this is detailed in the following section.

3.3 REVIEW OF OTHER PARK & RIDE SITES

3.3.1 A desktop study was undertaken to understand the provision of Park & Ride signing at other locations in the UK. York was chosen, as this is recognised as a good example of Park & Ride provision. Exeter was also used as this is a local example and provides an example of signing to Park & Ride sites from the M5.

3.3.2 Using Google Earth, the location of the Park & Ride sites in relation to the approaching junction (if located on a strategic route) and the Park & Ride sites themselves were considered. The design and the information shown on the signs were also taken into account.

OVERVIEW

3.3.3 Table 3-3 provides a detailed overview of the exact number of signs provided at the specified sites in York, Exeter and the two sites in Taunton. The Park & Ride signing provided on the A38 and A358 around Taunton is relatively comparable to the case studies above in terms of volume of signs, and distance from the Park & Ride sites. This is with the exception of the A358 approaching from the east, where the first sign for the Gateway Park & Ride is just 120 metres in advance of the turn off into the site.

3.3.4 The Exeter example shows signing for the Park & Ride on the motorway approach to the city, which is not present on the M5 on the approach to junction 25 at Taunton. There is also advanced signing on the A64 in York which is part of the strategic network managed by Highways England to notify motorists in advance that there is a Park & Ride site ahead.

Table 3-3: Summary of the number of Park & Ride signs including the distance from the site at selected locations in York, Exeter and Taunton

	York - Askham Bar	York - Designer Outlet			Exeter - Honiton Road	Taunton - Gateway			Taunton - Silk Mills	
Route (Direction)	A64 (east)	A64 (east)	A19 (north)	A19 (south)	M5 (south)	A358 (north west)	M5 (both directions)	A38 (south)	A358 (south east)	A38 (north east)
Number of signs	8	9	5	8	10	2	0	7	6	4
Distance of first sign from key decision point/junction	7.9km	600m	3.7km	250m	2.1km	120m	n/a	3km	450m	40m
Distance of first sign from P&R site	9.8km	1.8km	4.4km	1.1km	3.3km	280m	n/a	4.7km	1.5km	1.5km

3.3.5 A high level review of the identified sites compared to the two Taunton sites, indicates that there are potential improvements which can be implemented in Taunton to improve the Park & Ride signing, particularly in relation to advanced warning. A more detailed review of the types of signs provided at the selected York and Exeter sites is covered below.

YORK PARK & RIDE SITES

3.3.6 There are six Park & Ride sites in York, the Designer Outlet site was chosen for specific analysis as the A64, a strategic route managed by Highways England is used to access the site as well as the A19. Therefore, this is similar to the location of Taunton's Gateway Park & Ride site which is accessed by the strategic M5 route and the A358.

3.3.7 In addition a review of the signing to the Askham Bar Park & Ride site was also undertaken as this is the first site that people arriving to York on the A64 eastbound approach. It is also located slightly away from the A64, on the A1036, a more minor A road, therefore is similar to both Silk Mills and Gateway Park & Ride sites.

ASKHAM BAR PARK & RIDE SITE

3.3.8 On the A64 eastbound, there are five signs in advance of the junction for the Askham Bar Park & Ride, of these, the three advanced signs state, 'for York use Park & Ride'. These also state how far the Park & Ride site is and that it is open 7 days a week. The remaining two signs are in the immediate vicinity of the junction. These signs are therefore particularly informative to motorists as they provide the distance, days of opening, as well as encouraging them to use the Park & Ride.

3.3.9 Once on the A1036, which directly leads to the site, there are then a further three signs directing motorists to the site at key decision points. On these the blue 'P + bus symbol' is used as well as stating it is a Park & Ride. The name is also used on some of the signs but not consistently.

DESIGNER OUTLET PARK & RIDE SITE

3.3.10 For both the approaches on the A64 to the Designer Outlet site this is not the first Park & Ride site that motorists approach and therefore there is no signing on the A64 westbound as vehicles coming from this direction are signed to use the Grimstone Bar Park & Ride which is at the previous junction of the A64. There is a Park & Ride sign on the A64 eastbound, approximately 1.8km from the junction, which indicates there is a Park & Ride at the next junction.

3.3.11 Signing around the A64 and A19 roundabout junction is very clear and concise ensuring that motorists have enough warning at each decision point as to which lane they need to be in. This is also reinforced by directional arrows and 'P&R' text on the carriageway.

3.3.12 On the A19 northbound approach to the Park & Ride site there are two signs in advance of the turning. There is one approximately 3.7km in advance of the junction, which is a specific Park & Ride sign and states again that 'for York use Park & Ride'. There is then an additional sign approximately 900m from the junction, incorporated to the Advanced Directional Sign (ADS).

3.3.13 Overall the signing at the two sites in York is not always particularly consistent; there are changes between the design and information provided on each one, particularly in terms of the use of names. However, there is sufficient signing on the approaches to the sites to make motorists aware of their location and advise that the Park & Ride should be used to access York city centre.

EXETER PARK & RIDE SITES

3.3.14 There are currently three Park & Ride signs on the M5 southbound at Exeter, which direct motorists to Honiton Road Park & Ride site. They are located approximately 3.3km, 2.6km and 1.6km from junction 29, therefore giving motorists plenty of time to anticipate the turning and provision of a Park & Ride site. These signs advise motorists to 'Park & Ride for Exeter' with the arrow and 'P +bus' symbol. While these signs may not display as much information as those used in York, they do encourage motorists towards the Park & Ride site by making them aware if the site in advance of the junction.

3.3.15 In addition to this there are then seven additional signs between junction 29 and the site on Honiton Road. The road layout from junction 39 to Honiton Road Park & Ride is complex with a number of lanes and decision points. Therefore the signs are all located at key points where motorists have to make decisions on which lane to be in and which direction they need to go. Furthermore, the signing is also reinforced by the use of road markings which state 'Park & Ride' with directional arrows.

SUMMARY

3.3.16 Table 3-3 indicates that apart from the M5 and A358 from Ilminster, the number of Park & Ride signs and the distance that the first sign is provided in advance of the site for Taunton is

comparable to other Park & Ride locations.

3.3.17 Reviewing the types of signs, the use of 'For x use Park & Ride' appears to be a popular way to indicate to motorists that there are Park & Ride facilities available for the town/city. It has also indicated that signing is important at key decision points where motorists may be unclear which direction they need to go. This is particularly important for Park & Ride sites as they are located away from the town centres and are not always obvious, especially to visitors. If motorists cannot easily find the Park & Ride site, they are likely to become frustrated and head towards the town centre negating the purpose of them.

3.3.18 To understand current signing provision in Taunton beyond the numbers and distance from the Park & Ride sites in Taunton, an onsite audit was completed. The outcome and discussion of the findings are discussed in the following section.

3.4 EXISTING SIGNING REVIEW

3.4.1 An onsite audit was undertaken to document the existing signing for the Park & Ride sites in Taunton. Appendix A illustrates the current locations of these signs. A summary of the findings are provided by route below.

SILK MILLS PARK & RIDE

A38 WELLINGTON ROAD

3.4.2 For motorists approaching Silk Mills Park & Ride from the A38 Wellington, the initial sign is a small directional sign located on top of a number of signs under a tree canopy on the approach to Silk Mills roundabout. This sign is then repeated on the roundabout itself.

3.4.3 The location of the initial Park & Ride sign could be considered too close to the roundabout for visitors or tourists to take advantage of the Park & Ride as the carriageway is two lanes at this point, with the left hand lane for vehicles turning left and the right hand lane to go straight into Taunton town centre. Therefore, some motorists may already be in the right hand lane to go straight into town not being aware of the location of the Park & Ride. As Silk Mills Roundabout is regularly congested, particularly during peak periods motorists may make the conscious decision to continue directly into Taunton town centre instead.

3.4.4 One of the advantages of the Silk Mills Park & Ride site is that motorists can miss this queue into the town centre by utilising the quieter left turn lane onto Silk Mills Road. Therefore, this is an area for potential improvement to the Park & Ride signing.

A358 MINEHEAD

3.4.5 Signing from the A358 Minehead direction appears clear and sufficient to direct motorists to Silk Mills Park & Ride. There are signs in advance of the key decision points and the junctions themselves. There is also signing on the Staplegrove Road approach to the A358/A3065 junction, therefore catering for any motorists who might have entered Taunton from the north.

GATEWAY PARK & RIDE

M5 SOUTHBOUND JUNCTION 25

3.4.6 For motorists approaching Taunton from the M5 junction 25 there is the option to use Taunton Gateway Park & Ride. For southbound motorists exiting the M5, the initial sign for the Park & Ride site is located at the end of the off slip road on the exit of the roundabout. Its location is suited for motorists already turning onto A38 towards Illminster but those looking for Taunton have been directed into the right hand lane to turn right at the roundabout.

3.4.7 The location of this sign therefore requires visitors or tourists unfamiliar with Taunton to cross two lanes of traffic as they enter the roundabout or drive completely around the roundabout to access the Park & Ride site. Consequently, it is possible that motorists ignore the Park & Ride sign and continue into the Taunton town centre.

M5 NORTHBOUND JUNCTION 25

3.4.8 Additionally, there are no Park & Ride signs for northbound motorists exiting Taunton at junction 25. Although some motorists approaching from the south may have exited at junction 26 for Taunton, there is the likelihood that other motorists will continue to junction 25 of the M5. A sign advertising the Park & Ride at Taunton Gateway, just prior to the junction 26 northbound exit may help encourage motorists to continue onto junction 25, providing them with a quicker journey into the centre of Taunton.

A38 BRIDGWATER ROAD AND A358

3.4.9 Coming to Taunton from the A38 Bridgwater direction there is signing at three locations in advance of the junction with Toneway. The Park & Ride is then well signed on the junction 25 roundabout, but there is no signing between the A38/Toneway junction and Heron Gate roundabout, so could potentially be confusing to visitors to Taunton.

3.4.10 There is limited signing for the Taunton Gateway Park & Ride site for motorists approaching on the A358 from Illminster, with just one sign approximately 120m in advance of the turning into the site.

SUMMARY

3.4.11 In conjunction with the initial high level review the more detailed analysis of Park & Ride signing provision indicates that generally the signing is good but there are a number of locations where signing could be enhanced to provide clearer and more advanced information to motorists.

3.4.12 Park & Ride signing for the Silk Mills Park & Ride site is sufficient and clear entering Taunton from the north west and the A358 Minehead direction. However, improvement is required from the A38 Wellington direction.

3.4.13 Signing to Gateway Park & Ride is more piecemeal and could be improved from the A358 Ilminster direction and on the M5 as there is currently no advanced signing.

3.5 PROPOSED SIGNING

3.5.1 Having considered the examples of Park & Ride signing in other locations, and reviewed the current signing provision in Taunton, as well as the fact that the Park & Ride sites in Taunton are underutilised and offer many benefits to motorists, recommended improvements to the current Park & Ride signing are discussed below. It is envisaged that if implemented, this would encourage people to use the Park & Ride more, particularly visitors but other factors such as advertising and costs have not been considered in detail in this report. Table 3-4 provides an overall summary of the proposed recommendations.

SILK MILLS PARK & RIDE

A358 MINHEAD

3.5.2 As shown in table 3-4, it is not proposed that any additional signing is proposed on the A358 from Minehead. However, it should be noted that a traffic information VMS is proposed at Cross Keys to inform motorists of any traffic incidents or relevant information that may affect their journey. When there are no incidents or information to report it is recommended that the sign is used to provide parking information, particularly to Silk Mills Park & Ride.

A38 WELLINGTON ROAD

3.5.3 On the A38 approach from Wellington a parking information VMS will be provided, which will direct motorists to Silk Mills Park and Ride while also stating the number of spaces available. This VMS will have the capability to have traffic information provided on it too. Therefore, a further static Park & Ride sign is also recommended to improve the Park & Ride signing when the proposed VMS may be used for other purposes. It also provides further reinforcement to motorists in advance of having to choose which lane they need to be in ahead of the Silk Mills roundabout.

GATEWAY PARK & RIDE

A38 BRIDGWATER ROAD/A358

3.5.4 Signing on the A38 Bridgwater Road towards Gateway Park & Ride is generally good but there are gaps. In particular in advance of the Creech Castle junction although the Park & Ride signing it is not particular clear. Therefore, it is recommended that this is reinforced by introducing an additional Park & Ride sign on the approach to the bridge over the River Tone.

3.5.5 In addition, on the approach to Hankridge roundabout, it is not clear where the Park & Ride site is, especially for visitors to Taunton. To ensure clear and consistent signing it is recommended that an additional Park & Ride sign is positioned after the parking bay but in advance of the current advanced directional sign and the point when motorists have to choose a lane ahead of the roundabout so they have plenty of time to do this.

A358 ILMINSTER

3.5.6 As with the A38 Wellington Road a VMS will be provided in advance of the entrance to the Park & Ride but this will be able to display other information if required. As such to reinforce the Park & Ride signing and to ensure that clear Park & Ride information is provided if the VMS is used for other purposes, a static sign is recommended.

M5 JUNCTION 25

3.5.7 As with previous locations, VMS signs are proposed on both slip roads but as with other locations these will be able to display other information, so additional static signs would be of benefit. Consultation with Highways England is required and the location and final design will be subject to agreement with them. Initial conversations indicate that this is possible.

M5 JUNCTION 26

3.5.8 Capacity at Gateway Park & Ride is greater than Silk Mills and to avoid additional traffic on the A38 rather than M5, it is proposed that a sign encouraging motorists to use the Park & Ride at junction 25 is provided. Initial consultation with Highways England suggests that they may prefer signing for Taunton Park & Ride from junction 26 to direct people to the Silk Mills due to capacity at junction 25. Therefore, further consultation is required with Highways England to agree the

best signing at junction 26. Regardless of the overall decision, this study recommends that some form of signing at junction 26 to promote Gateway Park & Ride to motorists is provided.

OVERVIEW

3.5.9 An overview of the proposed Park & Ride signing is provided in table 3-4. This includes the location and proposed content as well as in indication of costs and the signs overall need as part of the VMS Study. A red, amber, green rating has been used to show how critical a static sign is to the overall VMS Study. Red indicates a critical need, amber a 'preferred option' and green is a quick/cheap fix.

3.5.10 Indicative costs have been calculated using the SCC TMC Schedule of Rates (2015-2016), and are subject to change following detailed design. The cost does include sign post and sign face supply and erection, plus any foreseeable take down of existing sign faces or posts. No C2 stats have been obtained and therefore this would be required for signs requiring posts and may lead to increased installation costs. In addition, it should be noted that signing on the M5 may be subject to change due to Highways England requirements. Furthermore,

3.5.11 As mentioned in the previous discussion, as well as improvements to static signing, Park & Ride information will also be incorporated into the VMS signing proposed as part of the VMS Study for Taunton. These signs will provide motorists with up to date information on the number of spaces currently available at the site. The VMS signs have been included in table 3-4 for completeness but individual costs of these signs are not included. Locations of the VMS signs are shown in Appendix A.

Table 3-4: Proposed Park & Ride Signing in Taunton

Location	Current sign/comments	Proposed content	Indicative cost	Status
Silk Mill Park & Ride				
A38 Wellington				
In advance of bus stop, opp crematorium		VMS – to state Park & Ride left with 600 spaces	Included in VMS	Covered in VMS Study
In advance of bus stop			£321	Preferred option
A358 (Minehead)				
Cross Keys	N/A – No further signing proposed. Note: Traffic Information VMS will be provided at Cross Keys	VMS – Traffic information	Included in VMS	Covered in VMS Study

Gateway Park & Ride				
A38 Bridgwater Road				
In advance of bridge over River Tone	Additional sign on new posts and near bridge structure		£384	Preferred option
A358 Toneway (eastbound)				
After current Parking layby but in advance of ADS	Additional sign on new posts		£506	Preferred option
A358 Ilminster				
In advance of turning into Park & Ride site		VMS – to state Park & Ride left with 1000 spaces	Included in VMS	Covered in VMS Study
In advance of turning into Park & Ride site	 New sign mounted on existing posts		£235	Preferred option
M5 southbound - Junction 25				
On verge on M5 slip road		VMS – to state Park & Ride left with 1000 spaces	Included in VMS	Covered in VMS Study
On M5 in advance of junction			£3337 costs may vary due to HE requirements	Preferred option but essential if agreement cannot be sought from Highways England regarding the placement of the proposed VMS signs

M5 northbound - Junction 26				
In advance of turning for junction 26		‘For Taunton use P & R at 25’. Following initial consultation with Highways England, further work is required to decide exact signing and costs but it is recommended that some sort of signing is placed at this location.	£3337 - indicative, assumed to be same size and requirements as other M5 signing (costs may also vary due to HE requirements)	Preferred option
M5 northbound - Junction 25				
On verge on M5 slip road		VMS – to state Park & Ride right with 1000 spaces	Included in VMS	Covered in VMS Study
On M5 in advance of junction			£3337 indicative, assumed to be same size and requirements as other M5 signing (costs may also vary due to HE requirements)	Preferred option but essential if agreement cannot be sought from Highways England regarding the placement of the proposed VMS signs

3.6 SUMMARY AND RECOMMENDATIONS

3.6.1 Providing better signing will assist with making motorists aware of the Park & Ride sites and it is hoped that this will encourage increased use. Encouraging people to the Park & Ride sites will assist with improving congestion in Taunton as less people will potentially drive into the town to the town centre car parks.

3.6.2 Signing for Taunton's Park & Ride sites is generally good. Therefore, only minimal signing is required to reinforce the location of the Park & Rides. The key locations are on the M5, particularly on both junction 25 slip roads.

3.6.3 Not including the VMS signs, the signing proposed in table 3-4 is estimated to be around £11,457. These signs have currently been recorded as 'preferred option', as although they would improve the consistency and advance warning provided to the Park & Ride sites, they are not critical as part of the VMS Study. Therefore, they could be implemented as part of the VMS Study to reinforce the VMS but could also be implemented as a separate package of works.

3.6.4 Overall it is recommended that the following is undertaken:

- → Key locations shown in table 3-4 are implemented as part of the VMS Study subject to agreement with Highways England.
- → Marketing of the Park & Ride is considered to increase awareness of the sites in conjunction with the launch of the new signing strategy

4 CAR PARK SIGNING

4.1.1 The following chapter provides a review of the signing infrastructure for the town centre car parks in Taunton. A number of areas are investigated and explored, including the car parks in Taunton, the proposed VMS Study, future highway improvements, benefits of improving car parking, in addition to reviewing the current car parking signing and recommended improvements.

4.2 CAR PARKS IN TAUNTON

4.2.1 Town centre car parks can provide an essential role in maintaining the vibrancy of a town by offering convenient parking for visitors and shoppers close to the town centre. It is therefore essential that motorists are provided with clear signing to the most appropriate car park for their visit.

4.2.2 Within Taunton there are numerous car parks, both private and publicly operated. However, the privately operated car parks are generally out of the control of the local authorities. Therefore this signing study only takes public operated car parks into consideration. Table 4-1 lists the town centre car parks currently operated by TDBC.

Table 4-1: Taunton Deane Borough Council car parks

No.	Car Park Name	Location	Type of Car Park	No. of Spaces	% occupied
1	Belvedere Road	Over 400 metres from the town centre	Shopper Long stay tariff 10 hours max	110	169%
2	Canon Street	Within 200 metres of the town centre	Short Stay tariff 10hrs max	288	110%
3	Castle Street	Between 200 and 400 metres from the town centre	Shopper Long stay tariff 10 hours max	70	240%
4	Coal Orchard	Within 200 metres of the town centre	Short Stay tariff 10hrs max	110	77%
5	Crescent	Within 200 metres of the town centre	Short Stay 4 hours max	226	110%
6	Duke Street	Within 200 metres of the town centre	Shopper Long stay tariff 10 hours max	58	79%
7	Elms Parade	Between 200 and 400 metres from the town centre	Sat Only Long stay tariff 10 hours max	27	93%
8	Enfield	Between 200 and 400 metres from the town centre	Long stay commuter tariff 10 hours max	197	Unknown
9	Fons George	Over 400 metres from the town centre	6 hrs max Leisure/ Recreation	83	Unknown

10	High Street	Within 200 metres of the town centre	Short Stay tariff 10hrs max	257	79%
11	Kilkenny	Over 400 metres from the town centre	Long stay commuter tariff 10 hours max	259	46%
12	Orchard Levels 1 to 3	Within 200 metres of the town centre	Short Stay tariff 10hrs max	553	61%
12	Orchard Levels 4&5	Within 200 metres of the town centre	Shopper Long stay tariff 10 hours max		
13	Tangier	Between 200 and 400 metres from the town centre	Long stay commuter tariff 10 hours max	247	41%
14	Victoria Gate	Over 400 metres from the town centre	Long stay commuter tariff 10 hours max	73	56%
15	Whirligig	Within 200 metres of the town centre	Short Stay 2 hours max	36	Unknown
16	Wood Street	Between 200 and 400 metres from the town centre	Shopper Long stay tariff 10 hours max	196	76%

4.2.3 In total there are 16 car parks operated by Taunton Deane Borough Council that charge six days a week. The largest car park is the Orchard multi-storey that offers both a short stay and longer stay shopper tariff. In total this has almost twice as many spaces as the other large car parks but based on the Taunton Parking Strategy, it had an occupancy rate of 61% in October 2010.

4.2.4 There are three tariffs for the Taunton car parks, shopper 1 and shopper 2 (short and longer shopper stay) commuter (long stay). Each car park is designated a particular tariff in an attempt to attract the most suitable type of user.

4.2.5 Duke Street, High Street and Orchard Multi-Storey are all car parks located within 200 metres of the town centre with tariffs designated for shoppers. However, the Taunton Car Parking Strategy 2011-2021 identified that each of these car parks have over 10% of vehicles staying for over 5 hours (vehicles staying for 5 hours or more are therefore considered a commuter). Similarly, the Strategy indicates that Belvedere Road and Castle Street car parks have commuter occupancy rates of 30% and 42%.

4.2.6 Therefore, analysis of the data in the Taunton Parking Strategy 2011-2021 suggests that signs could be used as a tool to improve how the current car parks are utilised. However, as noted above, charging and advertising, which are other factors which could have a bearing on the use of car parks are not considered as part of this report. It should be noted new charging was implemented at the beginning of April 2016 in the car parks to make the charging more appropriate to the respective tariffs.

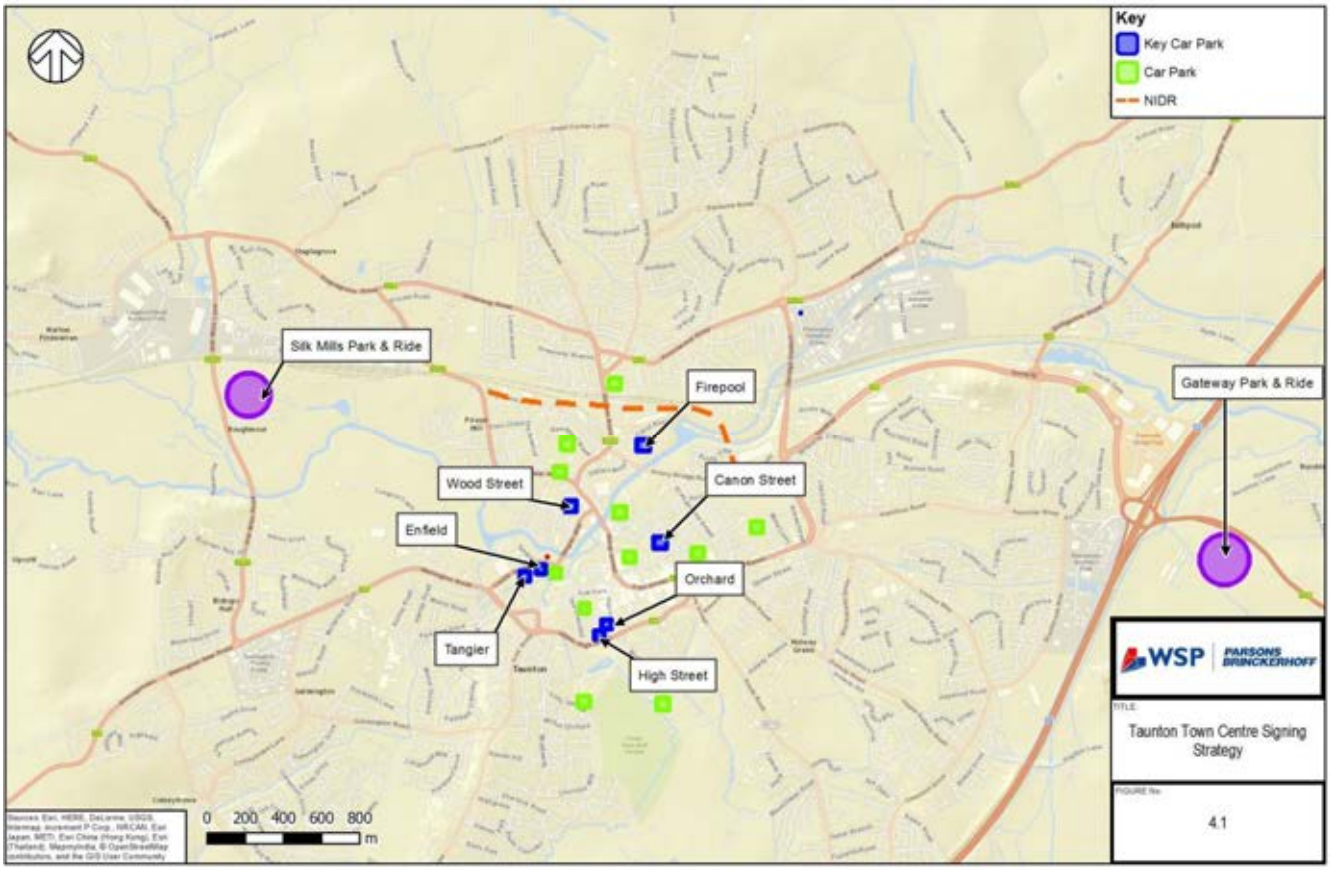
KEY CAR PARKS

4.2.7 To assist with identifying any new or consolidated signing to the car parks in Taunton it is necessary to identify the key car parks for signing. Taunton Deane Borough Council has identified that the key car parks are:

- Canon Street
- Orchard (Paul Street)
- High Street
- Wood Street
- Tangier (to include Enfield)
- Firepool (to be built)

4.2.8 The location of each of the car parks is shown in figure 4-1.

Figure 4-1: Location of the car parks in Taunton



4.2.9 Referring back to table 4-1, it is possible to see that the key car parks these are located within 400m of the town centre and are either short stay or shopper long stay, with the exception of Tangier. These also represent the car parks with the most spaces. The Crescent was originally included as one of the larger town centre car parks but this has now been removed.

4.2.10 Assessing the locations of the car parks, (figure 4-1) they are situated in a variety of locations around the town centre. As the aim of this strategy is to assist visitors to the town centre on the most appropriate route, these are suitable choices as key car parks to sign, as on each route into the town centre there is a key car park. This avoids motorists travelling across town unnecessarily, reducing traffic in the town centre.

4.2.11 It should be noted that Firepool is also included, although it is not built to date and it will be operated privately. As this is a key part of the development plans for Taunton it is considered this should be included as one of the key car parks.

4.3 VMS STUDY

4.3.1 Following on from the categorisation of the key car parks, the VMS Study aggregated the above car parks into groups to simplify signing. This is shown in table 4-2 below. Where required shopper 1 and shopper 2 tariffs have been classified as short stay and commuter tariffs as long stay.

Table 4-2: Categorisation of Taunton car parks for the VMS signing

Car Park [spaces]	Car Park Group [aggregated spaces]
Wood Street [196] - Short stay	
Canon Street [288] –Short stay	
The Crescent [226] *not included in scheme*	Town Centre [810]
High Street [257] - Short stay	
Orchard [553] – Short stay	
Tangier [247] – Long stay	Tangier [444]
Enfield [197] – Long stay	
Firepool [452] – Short stay	

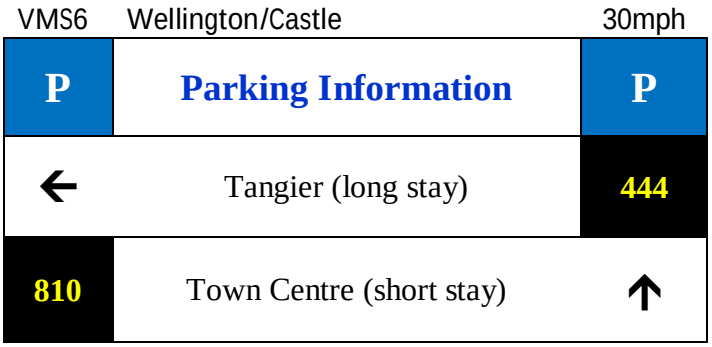
4.3.2 In conjunction with the aggregation of car parks, as part of the VMS Study an assessment of key decision points on the approaches into the town was completed. Decision points refer to traffic junctions or roundabouts where directions differ to car parks and the driver needs to make a decision as to which car park to head towards. Signing needs to be located upstream of the decision point to allow sufficient time to read, understand and make a decision regarding direction, including time for safe lane changing as necessary. For the purposes of the study nine decision points were identified and it has been agreed that VMS signs will be located at these points. See Appendix A for a map of these sites.

4.3.3 The VMS signs will provide a mix of fully colour VMS, where specific tailored information will be provided when required, such as traffic information and those which are a plate sign, incorporating a VMS element, to display the number of spaces available. The fully flexible signs will be provided on the outer approaches to Taunton, the plate and VMS signs will be located closer to the town centre at key points. Static signing will then be used to direct motorists more specifically to the car parks.

4.3.4 In addition to the locations of the VMS signs, the wording on these will also be taken into consideration in the proposed signing. An example of a proposed VMS sign is shown in figure 4-4 below. As shown, both the name of the car park and duration of parking is presented on the sign. By displaying the name and the duration of the parking motorists are provided with as much information as possible and provides an additional element of choice, where there may be several short or long stay car parks in close vicinity.

4.3.5 Providing the name of a car park alone may not mean anything to motorists, particularly visitors. However, having long and short stay on the signing helps motorists choose the most appropriate location to park based on their intended stay in the town.

Figure 4-2: Example of proposed VMS sign



4.3.6 The proposed static car park signing will fully take into account the proposals within the VMS Study and these have been considered when proposing static signing to ensure a consistent message is portrayed along the key routes into the town.

4.3.7 The provision of the VMS signs are a key aim of the TDBC Corporate Strategy, under Key Theme 3, Our Place. These signs in conjunction with the static signing will enable TDBC ensure that finding a car parking space in Taunton is quicker and easier as motorists will be able to see at a glance where there are spaces and save them time driving around the centre.

4.4 HIGHWAY IMPROVEMENTS AND FUTURE DEVELOPMENTS

4.4.1 When improving signing in the town centre it is important to consider what developments are proposed that may impact on road layouts and hence signing.

4.4.2 There is a vision within Taunton to re-develop a number of brownfield sites that will provide new and enhanced places to live, work, stay and enjoy leisure time. Development will be particularly concentrated on the areas around the River Tone waterfront.

4.4.3 The following is a summary of on-going or proposed future developments and road schemes:

- Northern Inner Distributor Road (NIDR) - a multi-million pound scheme currently under construction that will provide a new road to relieve congestion from the east to the west of Taunton. This will link into the Firepool Development (see below).
- Firepool Development - a 15 year development plan with an estimated cost of £105 million. It is intended to introduce a mixture of retail, leisure and residential facilities within close proximity to the town centre and adjacent to the River Tone. Priory Bridge Car Park (464 spaces) has already closed as part of this development. It is anticipated that the Firepool development will provide a 452 space public car park once opened which will be privately owned.
- Railway Station redevelopment - in conjunction with Firepool, it is intended to redevelop the Railway Station to provide a transport hub and improve the walking route into Taunton by providing a link via Firepool.
- Coal Orchard - a smaller development project adjacent to the River Tone waterfront. If approved, this will primarily be a retail and leisure complex with a small number of residential and office premises. This will require a reduction in car parking spaces at the Coal Orchard Car Park from 110 to 46 spaces.

→ Pedestrian Town Centre enhancements along North Street.

4.4.4 It is important to consider the above proposals in the context of the signing strategy to make sure that any recommendations are conducive with the future plans for Taunton and are 'future proofed'.

4.4.5 In particular the potential town centre enhancements could potentially lead to the closure of North Street. Therefore, it is important that any signing takes this into account. In addition, reducing the number of spaces at Coal Orchard means reinforced signing to Canon Street will be required to negate people travelling to Coal Orchard and then not being able to find a space which could lead to frustration. Canon Street will be signed on the VMS (see table 4-2) and improving the static signing is proposed as part of this strategy to address this.

4.4.6 The NIDR will also have an impact in terms of routing around Taunton. The proposed NIDR signing has been carefully considered in the following proposals to ensure it is consistent and suitable for the wider desires of the town.

4.5 SATNAV ROUTING

4.5.1 Signing has traditionally provided the most robust method to direct motorists along the most appropriate routes to their final destination. However, Satellite Navigation Systems (Sat Navs) are growing in popularity and motorists rely less on signing and instead are guided to their destinations by their Sat Navs. This is further complicated by the evolving nature of technology, with people being able to access real time information on their smartphones. For example, Goggle Maps will reroute a plotted route if there is an incident on the network. Moreover, people can also see particularly congested routes by a red, amber and green system; therefore people may decide to avoid these. This means that people may not follow the signed route to a destination, potentially leading to inappropriate routing on the network.

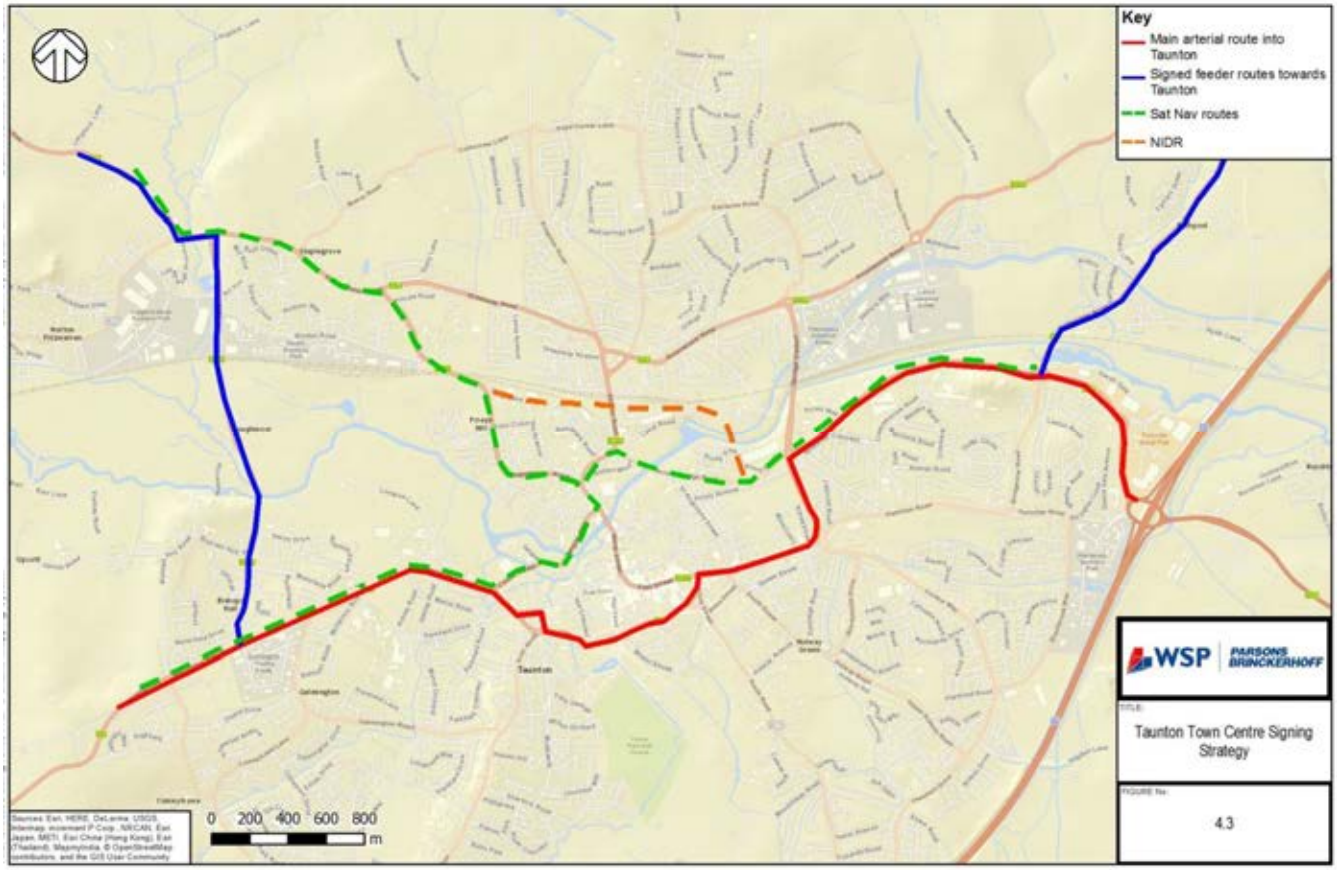
4.5.2 A lot of work has been done by local authorities to address the issue of HGV Sat Nav routing and sending large lorries down inappropriate routes but little work has been complete regarding disparities between signed routes and the routes Sat Nav systems take motorists. However, an initial desktop study has been conducted to determine whether Google Maps provides the same directions to the town centre, as the signing on the Taunton network. Table 4-3 summarises the findings.

Table 4-3: Signed versus Sat Nav routing from key destinations into Taunton town centre

Origin	Destination	Signed Route	Sat Nav Route
Minehead	Taunton Town Centre	A358, A3065 (Silk Mills Road), A38 Wellington Road	A358 and A3027 Staplegrove Road
Wellington	Taunton Town Centre	A38, The Crescent	A38, Castle Street
Bridgwater	Taunton Town Centre	A358 & A38	A358, A3038 Priory Bridge Road, Tangier Way & Castle Street
Ilminster	Taunton Town Centre	A358 & A38	A358, A3038 Priory Bridge Road, Tangier Way & Castle Street

4.5.3 As is demonstrated by the table4-3 and figure 4-2, there are differences between the signed routes and Sat Nav routes. However, comparing these routes to the proposed VMS signing (see Appendix A), it is hoped that the information on the VMS at the key decision points, will help encourage routing to the car parks along the signed routes rather than motorists following their Sat Navs. Consistent and clear static signing will also reinforce this. If motorists are confident that signing then takes them on the most appropriate route, they may be more likely to follow it.

Figure 4-3: Signed routes and Sat Nav routes into Taunton



4.6 BENEFITS OF IMPROVING CAR PARKING

4.6.1 As part of this study a brief review on the links between improving car park signing and improving the experience for potential visitors and the impact this has on the economy of the town has been researched.

4.6.2 New Economy[5] completed a study to have an overview of the current debate and examples on car parking strategies to apply in Greater Manchester. As part of this, enhancing the customer experience (among other factors) was seen as a way that local authorities could easily have an impact on the success of their parking. By providing informative signing to enhance the customer experience, it improves the ease of use of the car parks and encourages people back again.

[5] New Economy, (2014), 'Car Parking in Town Centres'

4.6.3 The Association of Town and City Management (ATMC) also completed a review of case studies across the country and in America. The case study presented for Nottingham, identified that wayfinding has always been important for visitors to town centres regardless of the mode of transport they are using. It is stated that when travelling by car these can be even more crucial and in fact as the car park itself is not the final destination, motorists have to be confident they are being signed to the right car park. It is stated that, 'clear, succinct signing that allows motorists to reach their destination could do much to improve the in-town parking experience'. [6]

4.6.4 What was clear from both of these papers is that, although not a defining factor in the success of car parking and a town centre, clear direction to car parking can be of benefit. The attractiveness of car parking can be eroded if parking is difficult and time saved getting to a car park quickly can be important to some people. In addition, the clever use of technology whether it is through VMS signing or providing information direct to smartphones or Sat Navs is an avenue worth exploring for the future.

4.6.1 However, what is clear from these examples and research generally is that there is no direct link between car parking and signing policy in particular and the success of a town. Other factors such as availability, quality and tariffs also have a role to play.

4.7 EXISTING SIGNING REVIEW

4.7.1 Having reviewed a number of elements important to car park signing in Taunton, the following section reviews existing signing followed by the proposed signing.

4.7.1 As for the Park & Ride signing, a site visit was undertaken to review car park signing along the main arterial routes into Taunton and in the immediate vicinity of the car parks. See Appendix B, for a map showing all signs identified.

4.7.2 Generally, for motorists approaching Taunton on all of the main arterial routes, motorists are provided with a single destination car park 'P' sign. These are then replaced with more specific signs on the roads around Taunton Town Centre.

A38 AND A358 WEST

4.7.3 For motorists approaching from the A358 Minehead, there are no specific car parking signs but the town centre and Park & Ride signing directs them onto the A3065 Silk Mills Road, where it then joins the A38 into town. For motorists approaching from the A38 Wellington, there is also no specific car parking signs but the town centre is signed. Although not explicitly parking signs, it is clear which direction the town centre is.

4.7.4 There is specific town centre 'P' signing further into town on the A38. These direct motorists on the Park Street/Cann Street gyratory, although there are some decision points where motorists could be unsure of which way to go and could be improved. Once on Upper High Street, the first car park sign directs motorists to The Crescent, if motorists miss this, the entrance to Orchard and High Street is then signed.

[6] Association of Town and City Management (ATMC), (2014), 'In Town Parking: What works?', p.49

A38 AND A358 EAST

4.7.5 For motorists approaching from the A358 east, the town centre is signed with an accompanying 'P'. These signs are consistent through to High Street car park where there is a right turn filter lane and signing into the Orchard Shopping car park. It should be noted that the High Street car park is also accessed from Paul Street but is not included on the signing.

4.7.6 Signing is also continued along the A38 for motorists who may ignore the High Street and Orchard car parks, to then direct them to The Crescent.

SUMMARY

4.7.7 None of the existing car park signs display the size of the car park or differentiate between long or short stay. With the exception of the Orchard Car Park none of the signing includes the name of the car park.

4.7.8 On all approaches to Taunton and throughout the town itself, there generally appears to be minimal signing for the car parks, particularly to the long stay shopper or commuter car parks on the periphery of the town centre. For car parks such as Wood Street or Tangier there are no specific signs at a strategic level.

4.7.9 Generally, the town centre with an accompanying 'P' directs people to Orchard and High Street car parks. No other car parks are currently signed at a strategic level. Although it is shown in table 4-1, that occupancy in these two car parks is currently sufficient; it is discussed in chapter 5 that some of the tourist destinations are also directed to these car parks. This could potentially impact on capacity but also highlights the importance of improving the Park & Ride signing and providing motorists the choice of car parks and the spaces available to them in each one.

4.8 PROPOSED SIGNING

4.8.1 Based on the review of the signing audit, a number of changes to the car park signing in Taunton are recommended. These are discussed on a route by route basis below.

A38 WELLINGTON ROAD

A38 AND CASTLE STREET

4.8.2 On this route into town, the key element is the provision of the VMS sign in advance of the turning onto Castle Street. It is proposed that the VMS will be incorporated onto the current static signing. The current static sign will also be replaced to incorporate the additional car park signing. This reinforces the message on the VMS sign and if it has a fault or is vandalised the static signing provides a backup.

4.8.3 Following this, it is proposed that signing directly into Tangier and Enfield car parks is provided. This will include the provision of the number of spaces in each car park to distinguish that the 444 spaces quoted on the VMS is across both car parks.

4.8.4 As Castle Street is also located along the same stretch of road as the Tangier and Enfield car park a similar sign is proposed at the entrance to this car park to distinguish that this is actually short stay rather than long stay. In addition displaying the number of spaces promotes that it is a relatively small car park of just 70 spaces.

4.8.5 As part of the site visit it was identified that the entrances to some of the key car parks do not make it clear as to which car park you are in. The proposed directional signing will assist with this but there is potential to improve this, so motorists are clear about where they are, which would enhance the parking experience for them.

CANN STREET AND UPPER HIGH STREET

4.8.6 Cann Street is part of the Park Street and A38 gyratory outside Taunton Crown Court. The road layout can be confusing and while there is signing on Park Street towards the town centre parking; there is none on Cann Street. Therefore, it is proposed to add a 'P' to the existing sign and also the 'i' and mobility sign which follows on from the static element of the Castle Street/A38 Wellington Road VMS.

4.8.7 Furthermore, there is currently a parking sign directing motorists from Upper High Street into The Crescent. As The Crescent is not a key car park, it could be confusing for people to see this sign and go to this car park rather than Orchard and High Street as specified in the VMS. Therefore, it is recommended this is removed.

A358 FROM J25

TOWARDS TOWN CENTRE

4.8.8 Following the VMS sign on Toneway, car parking to the town centre car parks is clear, although it is proposed that a further VMS sign is placed on East Reach to provide more specific information on availability at the town centre car parks (Orchard and High Street).

4.8.9 The VMS sign on East Reach also provides information for the long stay car parking at Tangier. Following this route through, from Hurdle Way to Tangier, signing is clear apart from the gyratory on A38 Compass Hill. As such a small 'P' is proposed to encourage people who are heading for Tangier from this direction to continue straight along the A38, rather than go right around the gyratory to Park Street.

A3038

4.8.10 The Toneway VMS directs people straight ahead to the proposed Firepool car park and also Canon Street. It is recommended that the proposed ADS sign, as part of the NIDR signing, is amended to show short stay (Canon Street) left at the new NIDR roundabout and short stay Firepool as straight ahead.

4.8.11 For those going towards Canon Street, there is currently signing at the mini roundabout in the vicinity of the Cricket Ground. This signs the Coal Orchard car park in addition to Canon Street. Coal Orchard has limited spaces and it is planned that this is reduced further. Therefore to highlight this to motorists, the number of spaces are proposed to be displayed on this sign to encourage more to go towards Canon Street over the Coal Orchard car park.

PRIORSWOOD ROAD

4.8.12 From the proposed Priorswood VMS, which is to be placed on Priorswood Road in advance of Obridge roundabout, the town centre car parking and Firepool is signed left over Obridge. This means there is a requirement to ensure motorists know which direction to go at Toneway/Victoria Parkway/A3038/A358 roundabout. Consequently, it is recommended that a new sign is placed in advance of this roundabout to inform motorists. They will then pick up the signing as proposed as part of the A358 route into Taunton.

4.8.13 The proposed VMS signs Wood Street and Tangier car parks straight ahead over the Obridge roundabout. Static signing towards Wood Street and Tangier along Priorswood Road is currently more piecemeal, therefore along this route a number of signs are proposed to ensure signing is clear and consistent, particularly at key decision points. A number of these requiring minor tweaks to existing signs, see table 4-4 and have been classed as 'preferred option', as although they will make the route clear, existing signing does assist with this as the Town Centre is well signed.

4.8.14 There is a requirement to add an additional sign on the Station Road approach to Staplegrove junction to make it clear that Wood Street car park is straight ahead and Tangier is around to the left. Following this, on the approach to Wood Street some additional signing would reduce the ambiguity of the route into the car park itself but these are not necessarily required as part of the VMS Study.

4.8.15 Similarly, existing signing on Bridge Street and Tangier Way could be improved and tied into the VMS signing more but again these are potentially 'preferred option' as they are not critical to motorists being able to find their way to the required car parks.

STAPLEGROVE ROAD

4.8.16 A stand alone, dedicated, plate style VMS is proposed at the Staplegrove/Chip Lane junction. To ensure consistency along Staplegrove Road it is proposed that the existing sign on the approach to the Station Road/Bridge Street junction is amended to be clear on the locations of the long stay (Tangier) and short stay (Wood Street).

MISCELLANEOUS

4.8.17 The entrance to The Crescent car park has a non-standard sign. Therefore, to ensure standard use of signing across Taunton this could be changed to a standard 'P' sign but it is not an essential requirement.

4.8.18 Furthermore, in the vicinity of the cricket ground and the Coal Orchard car park there are 2 signs stating 'Parking for 500 cars'. It is unclear where this car parking is as the capacity of Canon Street is 288. Also the positioning of these are not clear, with one being located high up on a lamp column and the other obscured by . Therefore, there is the potential to remove these signs but it may be worth leaving these in position until development in the area and the effects of other signing is clear.

OVERVIEW

4.8.19 The overall locations for these changes are discussed in table 4-4 and illustrated in Appendix C. As with the signing for the Park & Ride sites, the costs are indicative only and are subject to change following detailed design. The costs have been calculated using the SCC TMC Schedule of Rates (2015-2016) and no C2 stats have been obtained. Therefore this would be required for signs requiring posts and may lead to increased installation costs.

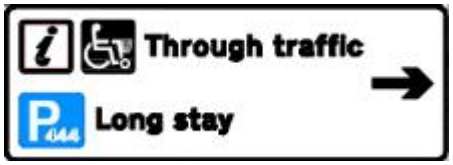
4.8.20 The key element of the car park signing is the provision VMS signs at key decision points, as explained in the VMS Study, which provides up to date information on car parking spaces currently available. The key purpose of the proposed static signing is to ensure that the routes to the car parks indicated on the VMS are consistently signed from the point of the VMS. Therefore, the following recommended signing is designed for this purpose. In addition, checks on signing of other car parks has been taken into account and therefore, a red amber green status has been used, as in other chapters, to indicate which signs are a critical element of the VMS Study, the costs provided for these will be added to the cost provided in the VMS Study to obtain an overall figure for the VMS works.

Table 4-4: Recommended car park signing changes

Location	Comments/current sign	Proposed Content	Indicative cost	Status
A38 Wellington Road				
Approach to Castle Street junction	VMS to be plate sign and car park spaces displayed electronically	VMS – to state: Tangier (long stay) 444 left and Town Centre (short stay) 810 straight ahead	Included in VMS	Covered in VMS Study
Approach to Castle Street junction	Combine static sign with VMS as detailed above		£968	Required as part of VMS Study
Castle St opp entrance to Tangier	 Old sign to be replaced. Sign to be mounted on existing post.		£148	Required as part of VMS Study
Castle St opp entrance to Enfield	Currently no sign into car park. Sign to be mounted on existing unused post.		£126	Preferred option
Castle St opp entrance to Castle Street	Currently no sign into car park. Sign to be mounted on existing post.		£126	Required as part of VMS Study
Cann Street	 Currently decision point but not clear for those who have been following Town Centre 'P'. Replace sign on		£778	Required as part of VMS Study

	existing post.			
Upper High Street	 Remove as sign on route to 'Town Centre car parks' as signed by VMS and therefore could add to confusion.	N/A	Assumed to be a quick win and can be taken done by SCC Traffic Management Team	Required as part of VMS Study
A358 from J25				
A358 Toneway	Full colour VMS in advance of roundabout	VMS – to state: Firepool (short stay) 452 ahead Canon Street (short stay) 288 ahead Town Centre (short stay) 810 left	Included in VMS	Covered in VMS Study
A3038 Priory Ave	 Proposed NIDR sign shown	Add parking info to proposed NIDR signing. Need to liaise with NIDR team. Short stay (Canon Street to be signed left and Firepool straight ahead)	Cost not included as to be incorporated as part of NIDR sign	Required as part of VMS Study
Priory Ave/Canon Street junction			£216	Required as part of VMS Study
East Reach	VMS to be plate sign and car park spaces displayed electronically	VMS – to state: Orchard (short stay) 553 ahead High Street (short stay) 257 ahead Tangier (long stay) 444 ahead	Included in VMS	Covered in VMS Study
A38 Compass Hill	Currently no sign. Ensures that motorists are aware need to go straight ahead for long stay parking.		£177	Required as part of VMS Study

Priorswood				
A3259 Priorswood Road	Full colour VMS in advance of roundabout	VMS – to state: Firepool (short stay) 452 left Wood Street (short stay) 196 ahead Tangier (long stay) 444 ahead Town Centre (short stay) 810 left	Included in VMS	Covered in VMS Study
A358 Obridge	Currently no sign, therefore inconsistent with VMS proposals		£1323	Required as part of VMS Study
A3259 Priorswood Road		 Add to existing sign	£60	Required as part of VMS Study
Clifton Terrace			£159	Required as part of VMS Study
Station Road			£294	Preferred option
Station Road on approach to Staplegrove junction			£400	Required as part of VMS Study

Wood Street	Currently no sign, need something to direct past entrance to Yarde Place		£177 – includes all three signs	Preferred option
	No signing into entrance of Wood Street			Preferred option
Bridge Street			£348	Preferred option
Tangier Way			£1300	Preferred option
Staplegrove Road				
Staplegrove Road/Chip Lane junction	VMS to be plate sign and car park spaces displayed electronically	VMS – to state: Wood Street (short stay) 196 right Tangier (long stay) 444 right Town Centre (short stay) 810 left Firepool (short stay) 452 left	Included in VMS	Covered in VMS Study
Staplegrove Road on approach to Station Road junction			£836	Required as part of VMS Study

Miscellaneous				
Opp entrance to The Crescent			£143	Preferred option
Coal Orchard and Priory Avenue/St James St/Canon St junction		Remove		Preferred option / Quick win

SUMMARY OF COSTS

4.8.21 As identified above, the critical element of the car park signing is the provision of VMS signs. Those highlighted in red are critical to the VMS Study as they ensure the static signing consistently reinforces the route identified by the VMS sign to the car park. The amber, 'preferred option', while assisting with the overall routing to the car parks are not critical as motorists could still follow existing signing and arrive at the car parks.

4.8.22 Table 4-5 provides an overall indicative costing of the proposed sign changes based on two potential options for implementation. These are:

- → Option 1 – all car park signing in table 4-4 is implemented
- → Option 2 – the signing is implemented on a two tier basis, with critical signing to be implemented as part of the VMS Study and 'preferred option' is implemented at a later date.

Table 4-5: Summary of costs

	Option 1 – all signs considered necessary as part of VMS Study	Option 2 – signing is implemented on a two tier basis
Required as part of VMS	£7578	£5191
Preferred option	N/A	£2388
Quick wins	Not costed – assumed SCC Traffic Management can accommodate these	Not costed – assumed SCC Traffic Management can accommodate these

4.8.23 As demonstrated by table 4-5 there is some difference between the two options in terms of cost. It is recommended that option 1 is taken forward where possible but option 2 is implemented as a minimum.

4.8.24 There is potential for a final option, both option 1 and 2 assume that the VMS Study will be implemented. However, if the VMS Study cannot be implemented, either option 1 or 2 could be implemented as a stand-alone option. Although it should be noted that primarily the current proposal complement the VMS Study and further work may be required to ensure these operate clearly and succinctly on an individual basis.

4.9 SUMMARY AND RECOMMENDATIONS

4.9.1 Car parking is a key part of a visitor's experience of a town. Being able to get to the most appropriate car park as quickly and efficiently as possible is an important part of this and is a key aim of the TDBC Corporate Strategy. The use of Sat Navs can make it more complicated for local authorities to direct motorists on the routes they desire them to use but by providing VMS signing and subsequent static signing to give visitors choice, this may have some influence and will provide motorists with information and options, improving their overall experience of the town.

4.9.2 Car park signing in Taunton is currently piecemeal and provides little or no specific information on the car parks, either by naming them or identifying whether they are short or long stay. By providing the VMS and static signing it will improve the information and choice available to motorists.

4.9.3 Some static signs are deemed as essential to the VMS Study these have been identified as critical which has led to two options being identified for implementation, depending on available budget. However, these could also be implemented independently of the VMS Study and provide overall improvements to Taunton town centre. The overall recommendations are:

- → The recommended signing changes above are implemented, in conjunction with the VMS Study, with option 1 as a minimum
- → Improve car park signing on entrance to Enfield, Tangier, Canon Street and Wood Street car parks.

5 TOURIST DESTINATION SIGNING

5.1.1 Brown tourist signs are synonymous with tourist destinations, therefore easily recognisable to motorists. This makes them an important part of the visitor experience helping motorists to get to their destinations on the best routes. It also has the potential to impact on their likelihood of coming back again. These are all elements which are identified in the TDBC Corporate Strategy as key issues they are aiming to influence and improve.

5.1.2 There are a number of tourist/ visitor destinations located within Taunton. Depending on the type of destination, brown tourism signs are typically used to direct traffic along the last leg of their journey on the most appropriate route.

5.1.3 A review of Somerset County Councils policy on tourist signing is provided in section 5.2 below before a review of the current signing is given and finally recommendations for changes are provided. This is done for both town centre destinations and those beyond Taunton.

5.2 SCC TOURIST SIGNING POLICY

5.2.1 Somerset County Council is responsible for tourism signing on Somerset's Highway network and as such they have a 'Brown & White Tourism Signs: Policy and Guidance Notes' document to define the policy and explain the procedure that is used to determine which applications qualify for tourism signing.

5.2.2 It is stated within this document that, 'Brown and White Tourism Signing is not for advertising but to help local visitors from outside the local area find facilities easily and safely, normally towards the end of their journey.' 'As a general rule, facilities, which are easily located on a main road, are not eligible for tourism signing.

5.2.3 In addition, 'signing will be considered for tourist destinations that are defined as a permanently established attraction or facility which attracts, or is used by visitors to an area and is open to the public without prior booking during its normal opening hours.' Typical tourist destinations include; visitor centres, historic buildings, museums, parks & gardens, zoos, theme parks, holiday parks and rural public houses/hotels/B&Bs/Restaurants & cafés/recreational facilities.

5.2.4 All applicants, regardless of the type of attraction must fulfil the following criteria:

- → Must have adequate on-site parking or off-site parking within reasonable walking distance.
- → Must not erect any advertisement at/near the brown tourist sign and must remove any off-site signing in place.
- → Facilities must be adequately marketed, including location, opening times, facilities, etc.
- → Location of facilities with clear direction, and where appropriate public transport access, must be adequately advertised.
- → Must have necessary planning permission for the establishment.

5.2.5 In addition to these general requirements there are then additional criteria based on the type of visitor attraction. See the policy document for more information[7].

5.2.6 Furthermore, it is stated within the policy that eligibility under the criteria does not automatically guarantee entitlement to tourist signs. Additional factors such as visual impact, road safety and traffic management needs, as well as appropriateness and quality of the facilities will also be considered.

5.3 TOWN CENTRE DESTINATIONS

5.3.1 Having considered the SCC Policy, a list of all signed destinations was drawn up. This is provided in table 5-1. An assessment has been made as to which of these are key tourist sites. These were based on those identified in the initial scoping report and from assessing the information provided on each on the internet. Feedback from TDBC and SCC also informed this decision.

Table 5-1: Current tourist destinations in Taunton and associated signing

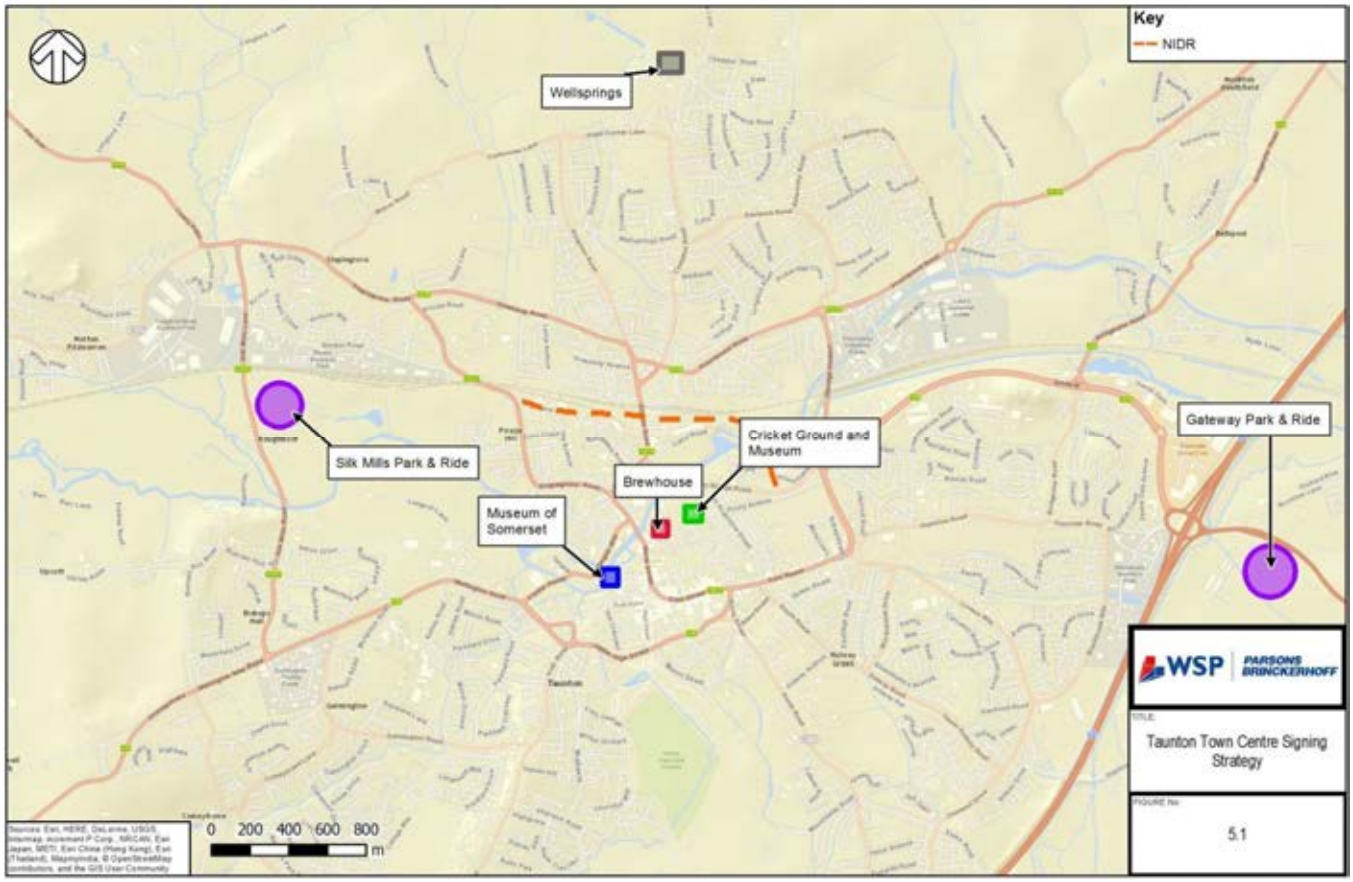
Destination	Key site	Meets policy	Comments on current signing
Town centre sites			
Castle Hotel		✓	Focused on town centre
Golf course, Vivary Park and High Ropes		✓	Focused in vicinity of site
United Dojos Martial Arts		No longer in operation	One sign
Cricket Museum	✓	✓	-Ok from western direction -Not signed from any other direction
Cricket Ground	✓	✓	-From the east directed to town centre parking -Ok from western direction, signed to town centre parking
Museum of Somerset	✓	✓	-From the east directed to town centre parking -Ok from western direction, signed to town centre parking
Swimming Pool		✓	One sign in vicinity
Canalside car park		n/a	One sign in vicinity

[7] http://www.somerset.gov.uk/roads-parking-and-transport/signs-and-road-markings/apply-for-a-tourism-sign/

Brewhouse Theatre and Art Centre	✓	✓	Ok but largely from west and locally, leave as is.
Corner House Hotel		✓	One sign in vicinity
Periphery sites			
Shopping			On generic sign on A358 from east
Hotels			On generic sign on A358 from east
Campgrounds			Signed in advance of Creech Castle
Leisure facilities		✓	On ADS between J25 and Hankridge roundabout
Wellsprings leisure centre	Potentially as key events held here	✓	Very well signed from J25
Blackbrook leisure centre		✓	Well signed from J25
Racecourse		✓	Currently ok from J25 Signed ok on A38 in town centre

5.3.2 In addition to the assessment of key sites, each site was assessed against the SCC Brown & White Tourism sign policy. The key factors considered were, whether there was suitable parking in the vicinity, whether it is a permanent site (including well-advertised) and its location from the strategic road network. This is also identified in table 5-1. The location of the keys sites are shown in figure 5-1 below.

Figure 5-1: Location of key tourist sites in Taunton town centre



5.4 EXISTING SIGNING REVIEW FOR TOWN CENTRE SITES

5.4.1 For those driving into Taunton specifically for the Museum of Somerset, motorists are informed to follow the town centre car park signs. These are located on the A38 Wellington approach and A358 from junction 25 of the M5.

5.4.2 Similarly, for the cricket ground, motorists approaching from the west along the A38 Wellington Road are directed to follow the town centre car parks. For motorists approaching the cricket ground from the east along the A358, motorists are directed by the text ‘cricket ground’ and on a separate sign the ‘cricket museum’.

5.4.3 Signing to the Brewhouse Theatre and Arts Centre is limited for motorists approaching from the A38, Wellington direction. However, signing from the east along the A358, Toneway, appears to be frequent and clearly directs motorists directly to the site. Signing in the vicinity of the theatre is good and consistent.

5.4.4 Of the other tourist destination sites in Taunton, some are no longer there, so these signs can be removed, these are covered in the below section. Of those that are present, many are sufficient and consistent and apply with the tourist signing policy.

5.4.5 On the A358, on the approach to Hankridge roundabout, there are a few locations where signing could be tidied up as there have been new sign plates added to existing which confuse the consistency of the signing but also make the signing too cluttered and therefore difficult for motorists to take in.

5.4.6 Overall, signing for tourist destinations within Taunton are generally well signed and the signing appears relatively new and clear. However, there are improvements which can be made in terms of consolidating and tidying up the current signing to make sure tourists are getting the information as clearly and succinctly as possible.

5.4.1 In addition to a review of the current signing, an assessment has been made as to whether the town centre car parks are the most suitable locations for motorists to be directed to. The town centre car parks refer to Orchard and High Street, which have 810 spaces. As part of Taunton Deane's Parking Strategy, the demand in 2010 for each of these car parks was 61% and 79% respectively. Although this figure needs revising it gives an indication that by directing tourists to these car parks to access the cricket ground and museum, they should be able to find a space, which will increase their confidence in their experience of Taunton. In addition, Orchard has 2 levels of charging providing visitors with a choice of tariff which they can select based on what suits their plan for the day.

5.4.2 That being said, capacity at these car parks could be challenging due to the fact that as mentioned in chapter 4, the town centre car parks (Orchard and High Street) are part of the car park signing strategy for shoppers and not just tourist destinations. This reinforces that promotion and use of the Park & Ride sites is an important part of the visitor experience, particularly when car parking may be busy, such as on cricket match days. It also strengthens the role of the full colour VMS signs being able to display messages such as 'Cricket match – use Park & Ride'.

5.4.3 Furthermore, as the cricket ground and museum are signed to the town centre car parks, it is imperative that pedestrian signing from these car parks is then provided to each of these destinations.

5.5 PROPOSED SIGNING FOR TOWN CENTRE SITES

A358 TONEWAY

5.5.1 The first key tourist sign that motorists see states 'shopping' and 'hotels'. In addition, other signs have been tacked onto the bottom, adding to the confusion. This is quite messy and can be confusing; therefore it is recommended that this sign is replaced. It is proposed that the generic destinations such as shopping are removed and the signing to destinations beyond Taunton are introduced (discussed further on in section 5.5). In addition, symbols are used to pick out the other key destinations in the town.

5.5.2 The ADS sign on the approach to Creech Castle also suffers from a lot of additional signing and patching being added to it. Also writing for the camp grounds brown sign is small. Therefore, it is proposed to remove these destinations and focus on some of the key sites, in particular those which require turning at this junction, the racecourse, rugby club and Blackbrook leisure centre.

5.5.3 There is also duplicated signing on the approach to the Toneway/Victoria Parkway/A3038/A358 roundabout. Therefore, it is proposed to consolidate these two signs and ensure they are simpler to read and comprehend for motorists and they are consistent with the previous and subsequent signing.

A38 VICTORIA PARKWAY

5.5.4 On the approach to the Toneway/Victoria Parkway/A3038/A358 roundabout. The current sign states the cricket ground and theatre are to the left but this is not shown as a brown tourist sign. This is not consistent with other signing and therefore, it is proposed that this is updated to ensure the information is provided but in a way that is recognisable to tourists and is consistent with other signing.

MISCELLANEOUS

5.5.5 There are instances where there is not much tourist signing, in particular from the A358 Minehead direction. However, considering the SCC policy and that brown and white tourist signs should be used towards the end of the journey, it is not recommended that additional signing is implemented at this stage.

OVERVIEW

5.5.6 Based on a review of the current signing, table 5-2 below recommends proposed signing improvements for town centre locations. When considering where and what information should be provided, the SCC Brown & White Tourism Sign Policy has been taken into account. As with the signing for the Park & Ride sites and car parking signing, they are indicative only and have been calculated using the SCC TMC Schedule of Rates (2015-2016) and no C2 stats have been obtained. Detailed design is required and costs may change following this.

Table 5-2: Proposed changes to tourist signing in Taunton

Location	Current Sign	Proposed sign	Indicative cost	Status
A358 Toneway from J25				
Between J25 and Hankridge roundabout			£2422	Preferred option
A358 from east on approach to Creech Castle junction			£363	Preferred option
Between Creech Castle and on approach to Toneway/Victoria Parkway/A3038/A358 RAB		 Wellsprings sign plate to be	£2463	Preferred option

		kept		
A38 Victoria Parkway				
A38 Victoria Parkway on approach to Toneway/Victoria Parkway/A3038/A358 roundabout			£799	Preferred option
East Reach				
Opp South Street		Remove	Assumed SCC Traffic Management can easily remove	Quick win
A3038				
Opp Canal Road		Remove	Assumed SCC Traffic Management can easily remove	Quick Win
Before left turn to Priory Avenue housing (on bottom of ADS)		Remove – will tie in with NIDR signing	Assumed SCC Traffic Management can easily remove	Quick win

5.5.7 In summary, there are some quick wins that can be implemented that will reduce some sign clutter. Moreover, some sign consolidation will also reduce clutter. Furthermore, there are instances where the current signing can be made clearer and the destinations on them rationalised so that the key destinations in Taunton are shown as a priority. Further consultation is required with the Somerset County Cricket Club regarding the potential for a coach drop off outside the ground and the best places for visitors to park, therefore further signing changes may be required.

5.5.8 The overall costs for the suggested improvements are approximately £6047 but this does not include a number of quick wins, where it has been assumed that the SCC Traffic Management Team can easily implement these at limited cost.

5.6 DESTINATIONS BEYOND TAUNTON

5.6.1 In addition to reviewing tourist destinations within Taunton, a review has been undertaken of the signs within Taunton on the strategic routes to tourist destinations beyond the town. A summary of those reviewed is provided in table 5-3 below. These sites were identified by TDBC as key sites.

Table 5-3: Current destinations outside Taunton

Destination	Meets policy	Comments on current signing
Hestercombe Gardens	✓	Signing is generally ok from all directions, some areas where minor improvements can be made
West Somerset Railway	✓	Is signed from J26 and also through Taunton but generally not consistently
Exmoor	✓	Signed from M5 southbound but piecemeal through town
Butlins	✓	Is signed from J26 Also motorway sign on northbound approach to J25

5.6.2 Hestercombe Gardens are located to the north of Taunton in Cheddon Fitzpaine. The route to the site is through Taunton and is approximately 15 minutes from the motorway. The information on Hestercombe Garden's website directs motorists from junction 25 along the A358, past the station and along Cheddon Road.

5.6.3 In order to fully assess the provision of the Hestercombe Gardens signing, the scope set out in chapter 1 has been widened for the purpose of this site only. As well as key routes in Taunton identified in figure 2-1, the more rural routes to the north of Taunton have also been surveyed to check for consistent and clear signing. This includes but also covers additional routes to that described on the Hestercombe Gardens website.

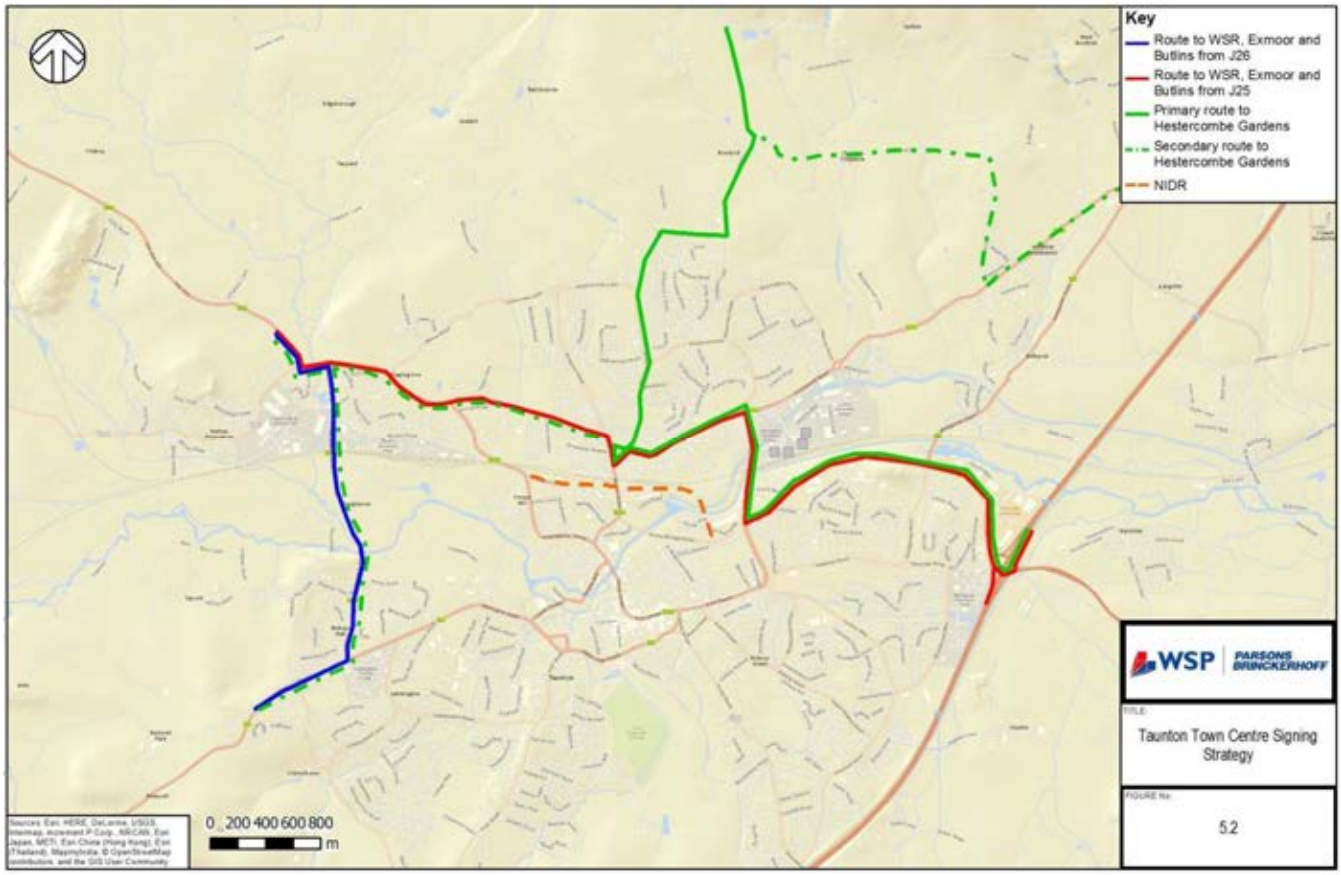
5.6.4 The West Somerset Railway (WSR) starts in Bishops Lydeard and access from Taunton is along the A358. Signing has been assessed through the strategic routes in Taunton only from the M5 junction 25.

5.6.5 Butlins is situated in Minehead. On the M5 southbound there is signing that directs people to Minehead via junction 24 (but this is in reference to Exmoor more specifically). In addition, using Google Maps to find a route from Bristol, it takes motorists via junction 23 along the A39. However, Butlin's website does direct motorists via Taunton and states that this is the 'simplest route'. Therefore, discussion may be required with Butlins to discuss the most appropriate route to the site. Nonetheless, for the purpose of this review the signing through Taunton has been considered as it is understood that some motorists will use this route regardless of signing further north on the M5 southbound and in addition, for those coming from the M5 northbound direction Butlins is signed from the M5 at junction 25.

5.6.6 In terms of Exmoor, this is a large area. However, there is a brown tourist sign on the M5 southbound just after junction 23 which states that for 'Exmoor via Minehead Jct 24, Brendon Hills Jct 25 and Dulverton Jct 27.' This is reinforced by signing for Exmoor on the approach to junction 25. Therefore, this route takes people through Taunton and out on the A358 towards Minehead.

5.6.7 A summary of the principal routing to the destinations outlined above are shown in figure 5-2 below.

Figure 5-2: Routing to tourist destinations beyond Taunton



5.7 EXISTING SIGNING REVIEW FOR DESTINATIONS BEYOND TAUNTON

5.7.1 An overall review of the current signing to Exmoor, Butlins, WSR and Hestercombe Gardens are provided in Appendix B.

BUTLINS, WSR AND EXMOOR

5.7.2 Approaching Taunton from the south, there is signing at the M5 junction 26 for Butlins and the WSR along the A38. Following the A38 towards Taunton, on the approach to the Silk Mills roundabout, there is signing which directs people onto the A3065 Silk Mills Road. This states that for Butlins and the WSR 'follow Minehead.' Minehead is well signed along the A3065 route and then onto the A358 out towards Minehead.

5.7.3 Butlins is currently signed off the M5 northbound and Exmoor is signed on the M5 southbound at junction 25. There is a sign on the splitter island of the Toneway stating both destinations and directing motorists along the A358 into Taunton.

5.7.4 Once on the A358, the current tourist signing does not mention these destinations until motorists reach the approach to the Toneway/Victoria Parkway/A3038/A358 roundabout, where there are currently two duplicated signs directing motorists right. Proposals to improve the signing on this section of road are detailed in section 5.5.

5.7.5 Once motorists have gone over the Obridge, there is a signing directing those going to WSR to turn right. On the splitter island of the Obridge Viaduct/A358/A3259 there is a sign for Hestercombe and WSR. The WSR is then fairly well signed around the top of the gyratory (St Andrew's Road), Kingston Road before joining Greenway Road. It is also signed at the Greenway Road/Staplegrove Road junction to ensure motorists keep on this route. There is no specific signing for either Exmoor or Butlins.

5.7.6 Approaching Taunton from the A38 Bridgwater, there is no signing for either the WSR, Butlins or Exmoor.

HESTERCOMBE GARDENS

5.7.7 On the A38 Wellington approach to Taunton, there is signing for Hestercombe, on the approach to the Silk Mills roundabout, which directs people onto the A3065. Once on the A3065 signing for Hestercombe is less obvious.

5.7.8 The first sign on the A358 Minehead approach to Taunton is in advance of the Silk Mills roundabout, directing motorists straight ahead. Signing along Staplegrove and Greenway Road is generally good and consistent but with some potential decision points where the route to Hestercombe is not particularly clear. In particular in advance of Kingston Road, the current sign is upside down, suggesting that motorists use Kingston Road rather than continuing ahead before turning up Cheddon Road. This could be very confusing for motorists and would be a quick win to ensure motorists are getting a clear message.

5.7.9 Following the route to Hestercombe out along Cheddon Road, Lyngford Lane and Pitchers Hill it is again consistent along the route. The small flower symbols are used, which assist motorists to keep to the route but they are also appropriate to the rural setting.

5.7.10 Hestercombe is also signed from A38 Bridgwater Road down the A3259 to Monkton Heathfield and then along Mead Way/Greenway. Again there are a couple of decision points at which it is not clear to motorists which way they should be heading, so potentially reinforcement at these locations is required to remove any confusion. In particular at the Greenway/Sidbrook junction, there is a fingerpost sign but it is not clear which way Hestercombe Gardens is.

5.7.11 In addition at the junction of the A3259 and Mead Way there is a non-standard sign which displays the 'flower' symbol and a bus, pointing straight ahead. It is assumed this is to prevent buses going along Mead Way and Greenway to access Hestercombe as this is a narrow route. Although it is non-standard it is considered that this should remain as it is.

5.7.12 For those who continue straight ahead on the A3259 (such as buses), signing is then consistent and relatively frequent along Priorswood.

5.7.13 Hestercombe is signed on the M5 from both north and southbound directions. From junction 25 the signing on the gyratory itself is limited and there is potential that motorists could end up going towards Ilminster rather than Taunton. This also applies to those coming from the south.

5.7.14 Once on the A358, the current signing is piecemeal until motorists reach the approach to the Toneway/Victoria Parkway/A3038/A358 roundabout, where Hestercombe is then signed right. Proposals to improve the signing on this section of road are detailed in section 5.5.

5.7.15 Turning right at the Toneway/Victoria Parkway/A3038/A358 roundabout, over Obridge, there is a signing directing those going to Hestercombe Gardens to 'follow Cheddon'. This is then replicated a number of times on Priorswood Road. The 'flower' sign then directs motorists around the A3038 gyratory in the vicinity of the railway station to enable them to then proceed along Cheddon Road.

5.7.16 There is potential to make sure that Hestercombe Gardens are picked up for anybody who is coming from the west along Greenway Road and misses the turning up Cheddon Road or anyone who joins Priorswood Road after this, as there is currently no signing along here.

5.7.17 In summary the signing to Hestercombe Gardens is relatively good, providing a clear route through Taunton and then along the rural lanes to the site itself. In terms of the signing to Exmoor, Butlins and the WSR, there are inconsistencies and potential 'blind spots' which could be improved.

5.8 PROPOSED SIGNING FOR DESTINATIONS BEYOND TAUNTON

5.8.1 Based on the review of the signing audit, a number of changes to the tourist destination signing in Taunton are recommended. These are discussed on a route by route basis below. A site visit was undertaken in April to assess the current signing provision. Where a sign has stated 'follow Minehead' for example, the signing for the stated destination has been checked throughout the route to ensure it is consistent and easy for motorists to follow. The recommendations are based on the observations from the site visit and the SCC Brown & White Tourism Signs Policy.

BUTLINS, WSR AND EXMOOR

A358 STAPLEGROVE ROAD AND GREENWAY ROAD

5.8.2 At the Staplegrove Road/Greenway Road mini roundabout there is an old sign stating Somerset World and Exmoor, this should be replaced to state the new destinations. Although this is not essential, it does provide a 'quick win' to make the signing more consistent for motorists.

CLIFTON TERRACE/KINGSTON ROAD/ST ANDREW'S ROAD GYRATORY

5.8.3 Coming from the east towards the Clifton Terrace/Kingston Road/St Andrew's Road gyratory destinations are signed straight over to St Andrew's Road. However, for any motorists that may miss and head left onto Clifton Terrace there is a WSR patch which has been added to the direction signing which makes the sign cluttered. WSR is signed as 'follow Minehead' further back along the route and the sign is stating Minhead right. However, the patch makes the sign harder to read therefore it is recommended a new sign is added at this location to make sure the route is easy to follow.

A358 OBRIDGE VIADUCT

5.8.4 On the Obridge Viaduct approach to Priorswood Road there is a current sign which is not consistent with previous signs, in that Exmoor and Butlins are not signed and Wellsprings is dominant in its positioning. Therefore, it is proposed that this sign is redesigned to incorporate these destinations and the sign is made clearer.

A38 BRIDGWATER

5.8.5 As for Priorswood Road above, there is currently no signing on the A38 Bridgwater approach into Taunton which directs motorists to either WSR, Exmoor or Butlins. There is potential to add a sign in advance of the A3259 junction to direct motorists to follow Minehead.

JUNCTION 25 ROUNDABOUT

5.8.6 As mentioned in the previous sections there is signing to some of the destination on the motorway, acknowledging that these signs can be expensive, it is not proposed that any additional motorway signing is implemented. However, once coming down the slip way on both approaches there is no signing to inform motorists which direction they need to go for Exmoor, Butlins and the WSR. Therefore, it is proposed that signs are placed on the roundabout to reinforce the direction of these. It is recommended that these are considered as part of the wider junction 25 project.

A358 TONEWAY

5.8.7 As discussed in section 5.5, signs at this location are currently duplicated therefore it is proposed that these are consolidated into one sign and made clearer.

A3038 PRIORY BRIDGE ROAD

5.8.8 There is currently a directional ADS on the Priory Bridge Road approach to the Toneway/Victoria Parkway/A3038/A358 roundabout. There is potential to add a patch for each of the destinations to capture any motorists coming from the centre of town.

HESTERCOMBE GARDENS

A3065 SILK MILLS ROAD

5.8.9 Signing at the A38/A3065 roundabout directs motorists heading to Hestercombe Gardens down the A3065. There is then no clear signing directing them to turn right at the A3065/Staplegrove Road roundabout. Therefore, it is proposed that a ‘flower patch’ is added to the current ADS in advance of this decision point to provide continuous and clear signing.

CLIFTON TERRACE/KINGSTON ROAD/ST ANDREW’S ROAD GYRATORY

5.8.10 There is currently a Hestercombe Gardens ‘flower’ symbol on an ADS sign on Kingston Road. This is very worn and is difficult to read, therefore replacing this is a simple ‘quick win’.

RURAL ROADS ON APPROACH TO HESTERCOMBE GARDENS

5.8.11 Hestercombe is also signed from Monkton Heathfield. At the junction of Greenway and Sidbrook Road there is a direction sign for Hestercombe but it is not clear and is not specifically for Hestercombe Gardens as a destination. Therefore, it is recommended that a brown tourist sign is placed here.

5.8.12 Furthermore, at Lyngford Lane/Pitcher's Hill junction there is a brown tourist sign but this is for those coming from the south on Lyngford Lane and not those who have come from the Monkton Heathfield direction. Furthermore, the positioning of the existing sign is not clear as the junction is on a bend and the sign is not in advance of the bend so it is not clear for those coming from Taunton. Therefore, it is recommended that the existing sign is relocated further south and a new sign plate is added to the existing finger post for those coming from Monkton Heathfield.

A358 OBRIDGE VIADUCT

5.8.13 As with the previous comments on the other destinations beyond Taunton, the current brown tourist sign on the Obridge Viaduct is not consistent with previous signs, particularly for Exmoor and Butlins. Therefore, it is proposed that this sign is redesigned to incorporate these destinations and the sign is made clearer. It will continue to sign Hestercombe Gardens.

Table 5-4: Proposed signing to tourist destinations outside Taunton

Location	Current Sign	Comments	Status
Butlins, WSR and Exmoor			
A358 Staplegrove Road and Greenway Road			
At Staplegrove Road/Greenway Road junction		Replace brown tourist sign with new Butlins Exmoor WSR	Required/ quick win
Clifton Terrace/Kingston Road/St Andrew's Road gyratory			
Splitter island, Clifton Terrace		Replace sign to separate WSR and have as separate sign plate.	Required/ quick win
A358 Obridge Viaduct			
Obridge Viaduct approach to Priorswood Road roundabout		Redesign to add in Exmoor and Butlins. Also potential to re-order with Wellsprings sports centre at bottom.	Preferred option
A38 Bridgwater			

On A38 between Walford Cross and A3259 Monkton Junction	N/A	Add new tourist sign Exmoor Butlins WSR Follow Minehead	Required
Junction 25 roundabout			
On A358 just off the M5 southbound slip raod	N/A	Add new Exmoor , Butlins, WSR, Hestercombe brown flag sign on splitter island	To be considered in Jct 25 scheme
On A358 just off the M5 northbound slip road	N/A	Add new Exmoor , Butlins, WSR, Hestercombe brown flag sign on splitter island	To be considered in Jct 25 scheme
On A358 just off the M5 on splitter island	N/A	Replace existing tourist sign (re-order with Exmoor first) and add WSR and Hestercombe	To be considered in Jct 25 scheme
A358 Toneway			
Between Creech Castle and on approach to Wickes RAB	 	Take down and replace both signs and erect sign stating: Cricket Museum Follow Minehead for Exmoor Butlins WSR Hestercombe Gardens	Preferred option

Hestercombe Gardens			
A38 Wellington Road approach to Taunton and Silk Mills Road			
Silk Mills Lane just past turning to Bookers (north of Great Western Way)		Add flower patch for Hestercombe Gardens to existing sign	Preferred option
Clifton Terrace/Kingston Road/St Andrew's Road gyratory			
Kingston Road		Replace faded flower patch	Quick Win
Rural roads on approach to Hestercombe Gardens			
Lyngford Lane/Pitcher's Hill junction		Add Hestercombe flag at junction, for approach from Monkton (potentailly on finger post). Also reposition existing flower sign for those approaching from Taunton on Lyngford Lane, further south to improve visibility of the sign to motorists.	Preferred option
Greenway/ Sidbrook Road		Replace blue bordered worn Hestercombe sign with brown sign and / or standard Hestercombe flower sign	Required

A358 Obridge Viaduct			
Obridge Viaduct approach to Priorswood Road roundabout		As per comments above for Exmoor - sign to be re-desgined and Hestercombe to remain.	Preferred option
Junction 25 roundabout			
See section above on Butlins, WSR and Exmoor			
A358 Toneway			
See section above on Butlins, WSR and Exmoor			
A3038 Priory Bridge Road			
See section above on Butlins, WSR and Exmoor			

5.8.14 Signing to the WSR in particular is good throughout Taunton. Butlins is signed well from the A38 Wellington direction but is less so from junction 25. Similarly, Exmoor is also less consistently signed. There is no signing to any of these destinations on the A38 Bridgwater approach to Taunton.

5.8.15 There would be benefit to improving the signing to all three destinations from junction 25 as Exmoor is specifically signed off the M5 at this point. Additional signing would also be of benefit on the A38 Bridgwater approach to Taunton, which signs motorists through Monkton Heathfield rather than Taunton town centre.

5.8.16 Generally signing to Hestercombe is very clear and consistent. However there are a couple of decision points that could benefit from some additional signing to make the route clearer, in the town itself but also on the rural roads in the vicinity of Hestercombe Gardens.

5.9 SUMMARY AND RECOMMENDATIONS

5.9.1 In relation to the town centre destinations, there are some quick wins that can be implemented and with some sign consolidation will reduce sign clutter and provide a clearer picture to motorists. The overall costs of these recommendations are approximately £6047.

5.9.2 With regard to the identified destinations beyond Taunton, the signing is generally good but some additional signing will make it clearer for tourists wishing to travel through the town to reach the destinations beyond.

5.9.3 The tourist destination signing while considered in relation to suitable car parks, is distinct from the Park & Ride and car park signing and therefore the VMS Study. While all three would help improve the visitor experience to Taunton the proposed tourist signs are not critical to the VMS proposals. The ideal, 'gold plated' option would be to implement the changes to all categories of signing at one time but it is acknowledged that due to budgetary pressures this may be difficult.

5.9.4 In summary the following recommendations are proposed for tourist signing as a whole in Taunton:

- → Pedestrian signing between the car parks and each destination is reviewed
- → Consultation with those businesses where changes to their current tourist signs are proposed is undertaken
  - In relation to this it is recommended that consultation is undertaken with Butlins to discuss the directions provided on their website
  - Consultation is undertaken with the Somerset County Cricket Club regarding car and coach parking
- → Junction 25 scheme to consider potential improvements in relation to signing to Exmoor, Butlins, WSR and Hestercombe Gardens
- → Implement changes as shown in tables 5-2 and 5-4 above.

6 CONCLUSION AND RECOMMENDATIONS

6.1.1 This report has examined Park & Ride signing, car park signs and brown tourist signs in Taunton. Overall while there is a piecemeal approach in some areas, there are relatively simple solutions to improve the signing in Taunton across all of the signing categories looked at. Improving signing to all of these places would help improve wayfinding within Taunton, which is a key aim that TDBC have identified in their Corporate Strategy to make Taunton welcoming and easy to get around for residents and visitors.

6.1.2 This chapter provides a brief final summary of each of the categories of signing before a summary of costs and the options available for implementation are discussed and final recommendations presented.

PARK & RIDE SIGNING

6.1.3 Park & Ride signing is comparatively good when compared to other cities in the UK. There are a few locations where additional signing could be erected to ensure continuity and reinforce the presence of the Park & Ride sites but these are limited. In particular reinforcing the Park & Ride signing on the M5 will assist with promoting the sites and further liaison with Highways England is advised.

CAR PARK SIGNING

6.1.4 Current car park signing is generally sufficient for the current situation in Taunton. However, improvements proposed in this report would provide better information and choice to motorists. These could potentially be implemented as a stand-alone package of works but equally and to have most benefit ,as part of the VMS Study. Indeed they are required as part of the VMS Study to make sure this is implemented as effectively as possible and ensure once motorists are presented with information on a VMS sign then can then follow the route to the car park at the end of their journey.

TOURIST INFORMATION SIGNING

6.1.5 As with the previous categories of signing, provision is generally satisfactory, although there are instances where signing is duplicated and has been added to over the years so signs have become cluttered and difficult to read. Therefore, some rationalisation of destinations on these signs and ensuring consistency will ensure that motorists and visitors to Taunton are provided with as much information as possible but in a clear and succinct way.

OVERALL COSTS

6.1.6 Table 6-2 below provides a summary of indicative costs associated with the proposed changes recommended in this report. It is split by those signs required as part of the VMS Study, those which would provide improvements and improve the overall signing in the town but are not required as part of the VMS Study and some quick wins which could be achieved relatively simply and quickly. It is assumed that SCC's Traffic Management will be able to implement the quick wins at minimal costs.

6.1.7 As stated in previous sections, costs are preliminary only and are based on the SCC TMC Schedule of Rates (2015-2016). No C2 stats have been obtained, therefore this and the detailed design could increase the costs provided.

Table 6-1: Summary of indicative costs

	Park & Ride signing	Car Park signing	Town centre tourist destination signing[8]
Required (as part of VMS)	N/A	£5191	N/A
Preferred option	£11,367	£2388	£6047
Quick win	Assumed to be carried out by SCC Traffic Management Team	Assumed to be carried out by SCC Traffic Management Team	Assumed to be carried out by SCC Traffic Management Team
Total	£11,367	£7579	£6047
Overall total			£24,933

6.1.8 Table 6-1 demonstrates that not including the wider tourist destination, the recommended improvements within this report amount to £24,933. However, not all signs changes presented are required as part of the VMS Study. As discussed in chapter 4, there are a number of options which could be taken forward which combines the signing proposed in this report with that of the VMS Study. Therefore, the following section discusses the potential for the different options for implementation.

OPTIONS AND RECOMMENDATIONS

6.1.9 For a truly improved visitor experience to Taunton the proposals in the VMS Study and this signing strategy should be implemented as a whole. However, it is recognised that this may be unrealistic due to budgetary constraints. Consequently, a number of options for implementation have been identified. The proposed options are:

- **Option 1**, all signing included – This would provide the most comprehensive package but it is acknowledged that the tourist signing is not relevant to the VMS Study and therefore this is not recommended as the best solution at this time.
- **Option 2**, all Park & Ride and car park signing included – This is the optimum scenario as it provides a comprehensive package of improvements to ensure motorists and visitors to Taunton get the best experience possible.
- **Option 3**, all Park & Ride signing included and only required car parking signs – This ensures the Park & Ride signing beyond the VMS signs is reinforced and that there is a consistent message between the proposed VMS signs and appropriate car parks. The additional 'preferred option' car park signing is not included as it is not critical to the overall routing to the key car parks.
- **Option 4**, all car park signing included (no Park & Ride signing)– while raising the profile of the Park & Ride sites is important to the overall parking strategy in Taunton, the information provided on the VMS signs could be deemed as sufficient to improving this. As such this option includes only improvements to the car park signing but this is not recommended as it does not provide sufficient reinforcement of the Park & Ride sites
- **Option 5,** only required car parking signing provided – this option provides only minimal improvements to the car park signing to ensure it is consistent with the VMS signs. Based on this is it not recommend as the favoured option for implementation.

[8] Does not include cost of changes to tourist destination signing beyond Taunton

6.1.10 For options 2-5, it is recommended that the tourist signing is implemented but as a separate package of works. In addition, it should be noted that there is an additional option which implements the Park & Ride signing and car park signing as independent packages if the VMS Study was to not go ahead. An overall summary of what each option provides and the costs are provided in table 6-2.

Table 6-2: Summary of options

	Option 1 – all signing included with VMS	Option 2 – All Park & Ride and car park signing included	Option 3 – All Park & Ride signing included and only required car parking	Option 4 – All car park signing included	Option 5 – only required car parking signing provided
VMS signing	✓	✓	✓	✓	✓
Provides Park & Ride signs	✓	✓	✓		
Provides all car parking signs	✓	✓		✓	
Provides tourist information signs	✓				
Indicative cost	£24,933	£18,946	£16,558	£7579	£2388
Total including all VMS and POF costs (£1,057,120)	£1,082,053	£1,076,066	£1,073,678	£1,064,699	£1,059,508
Recommended option	5th	2nd	1st	3rd	4th

6.1.11 As is shown in table 6-2, the recommended option is to provide all recommended Park & Ride signs and the essential/required car park signing as part of the VMS signing. Although this does not include all car park signing it captures the core elements.

6.1.12 The overall recommendations of this report are:

- → Implement option 3 as described above (see Appendix D for a summary of the proposed changes included in this option)
- → The tourist destination signing is implemented as a separate package of works

6.1.13 As part of this the following should also be considered and implemented:

- → Provide marketing of the Park & Ride sites to increase awareness of the sites in conjunction with the launch of the new signing
- → Improve car park signing on entrance to Enfield, Tangier, Canon Street and Wood Street car parks
- → Pedestrian signing between the car parks and each signed tourist destination is reviewed

6.1.14 These recommendations, if taken forward would to ensure that signing in Taunton provides motorists with the best possible information and options to make informed decisions and take appropriate routes, helping combat congestion and encouraging people back to Taunton again and again.

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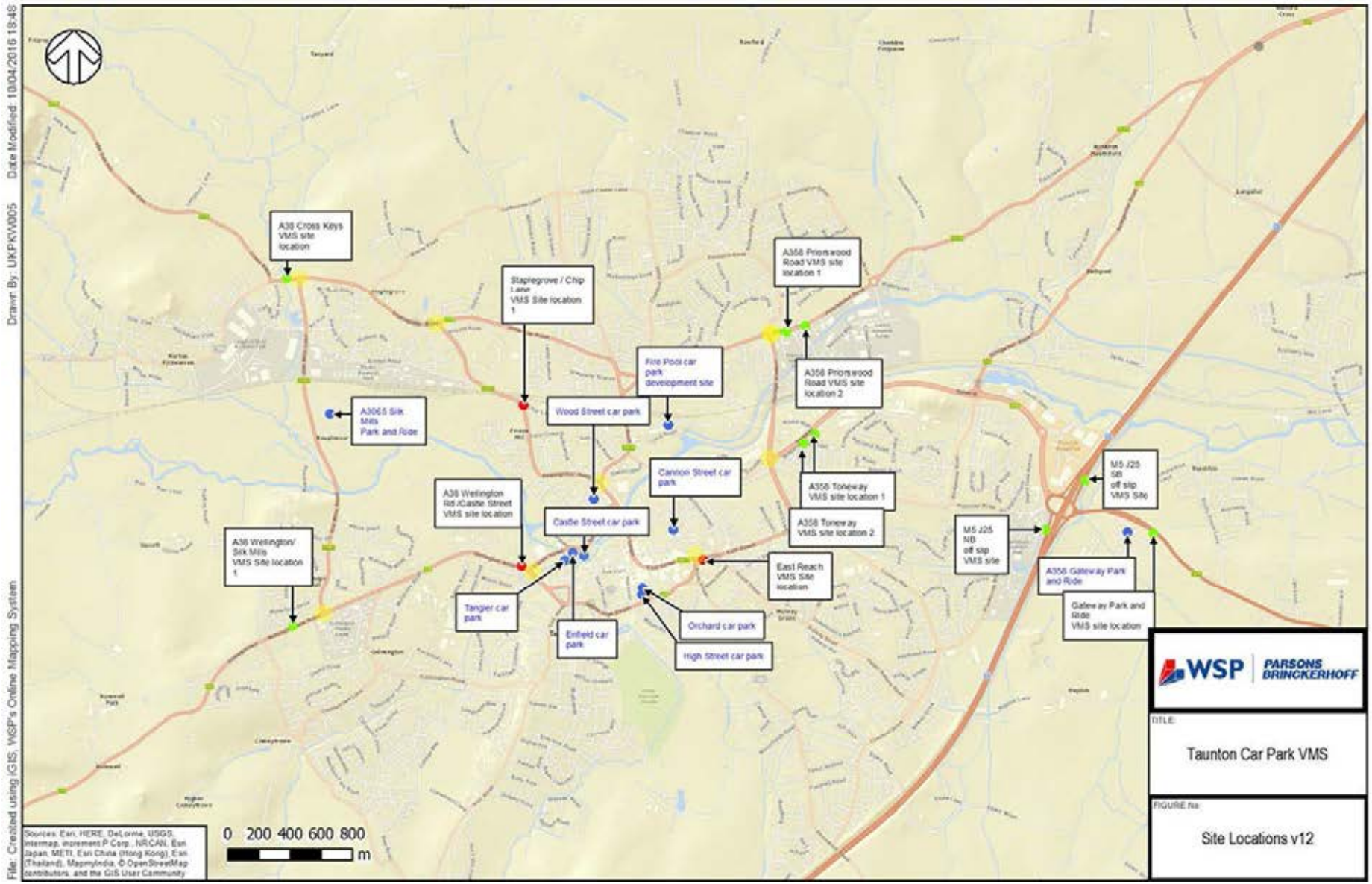
Appendix A

PROPOSED VMS SIGN LOCATIONS


A38 Cross Keys VMS site location
Staplegrove / Chip Lane VMS Site location 1
A358 Priorswood Road VMS site location 1
Fire Pool car park development site
A358 Priorswood Road VMS site location 2
A3065 Silk Mills Park and Ride
Wood Street car park
Cannon Street car park
A358 Toneway VMS site location 1
M5 J25 SB off slip VMS Site
A38 Wellington Rd /Castle Street VMS site location
Castle Street car park
A358 Toneway VMS site location 2
A38 Wellington/ Silk Mills VMS Site location 1
M5 J25 NB off slip VMS site
East Reach VMS Site location
A358 Gateway Park and Ride
Tangier car park
Enfield car park
Orchard car park
High Street car park
Gateway Park and Ride VMS site location
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Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
WSP | PARSONS BRINCKERHOFF
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Taunton Car Park VMS
FIGURE No:
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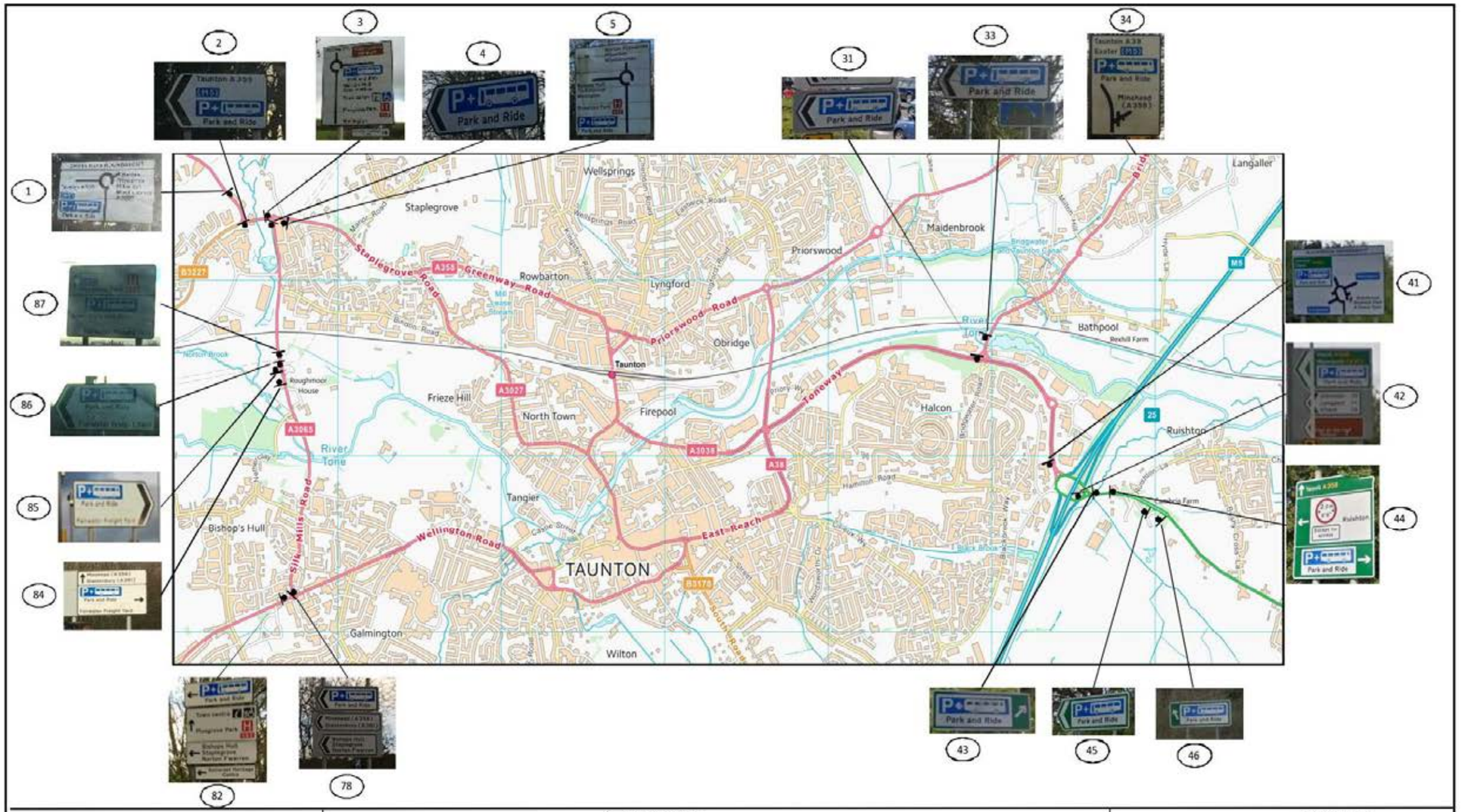
File: Created using iGIS, WSP's Online Mapping System
Drawn By: UKPKVW005
Date Modified: 18/04/2016 18:48

Appendix B

EXISTING SIGNING PROVISION



WSP | Parsons Brinckerhoff

Riverside Chambers, Castle Street, Taunton, Somerset,TA1 4AP
Tel: 44-(0)1823-281190

CLIENT/PROJECT

SOMERSET COUNTY COUNCIL: TAUNTON TOWN CENTRE SIGNING STRATEGY

TITLE

EXISTING PARK AND RIDE SIGNS

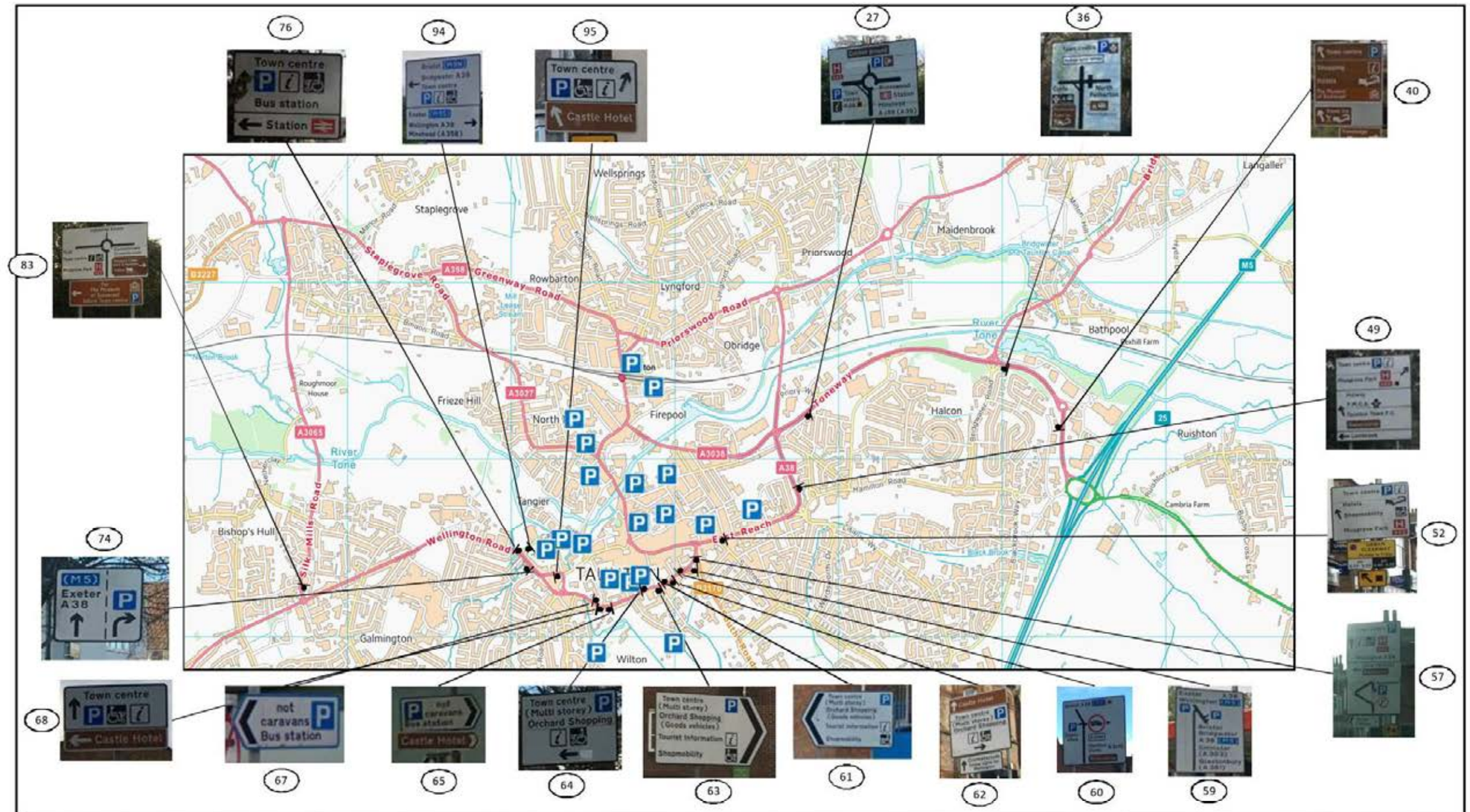
DATE
20/01/15

SCALE
Not to scale

PRODUCED BY
GM

CHECKED
LP

APPROVED
LP



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CLIENT/PROJECT

SOMERSET COUNTY COUNCIL: TAUNTON TOWN CENTRE SIGNING STRATEGY

TITLE

EXISTING CAR PARKING SIGNS ON EXTERNAL ROUTES

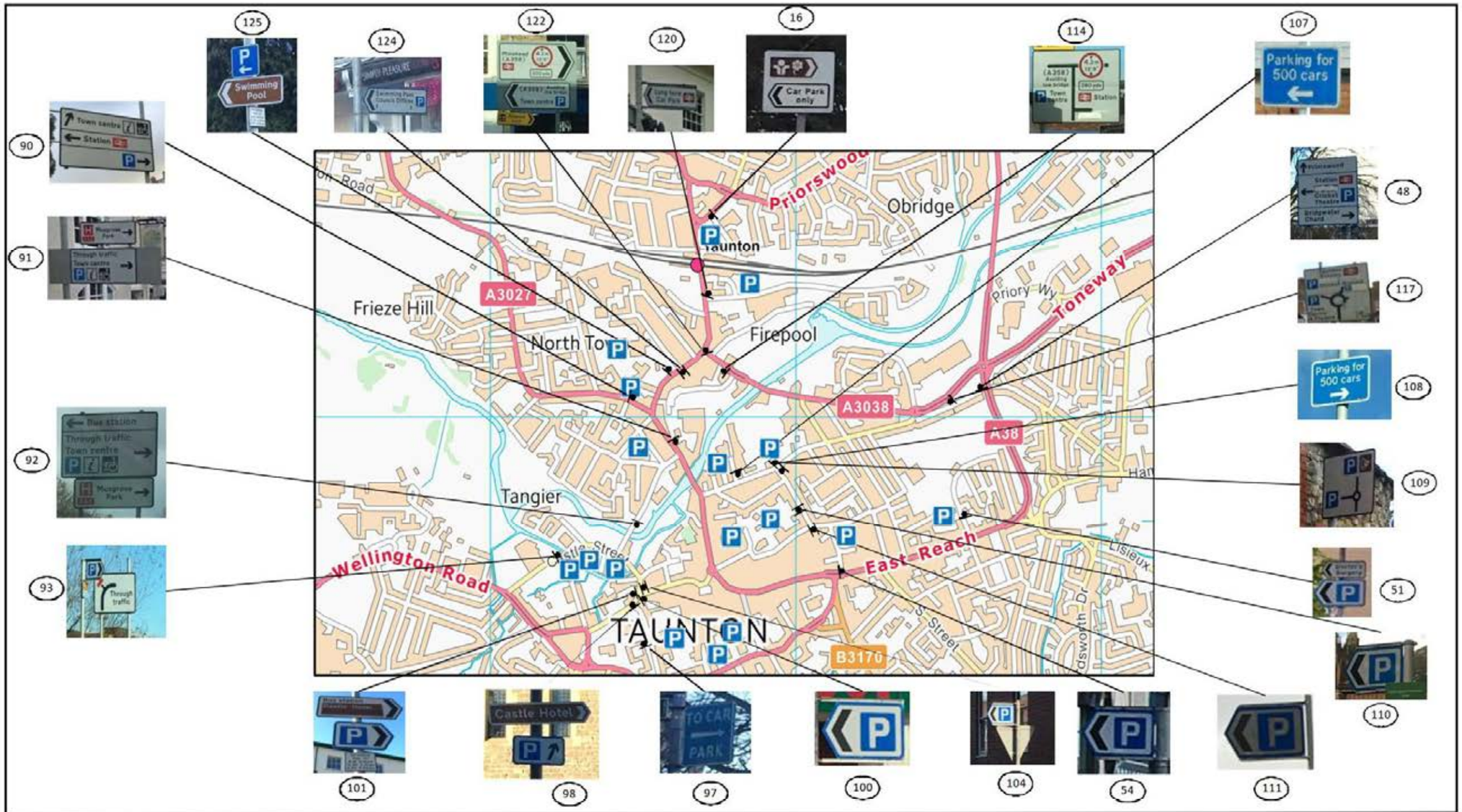
DATE
20/01/15

SCALE
Not to scale

PRODUCED BY
GM

CHECKED
NJ

APPROVED
LP



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CLIENT/PROJECT

SOMERSET COUNTY COUNCIL: TAUNTON TOWN CENTRE SIGNING STRATEGY

TITLE

EXISTING CAR PARKING SIGNS ON INTERNAL ROUTES

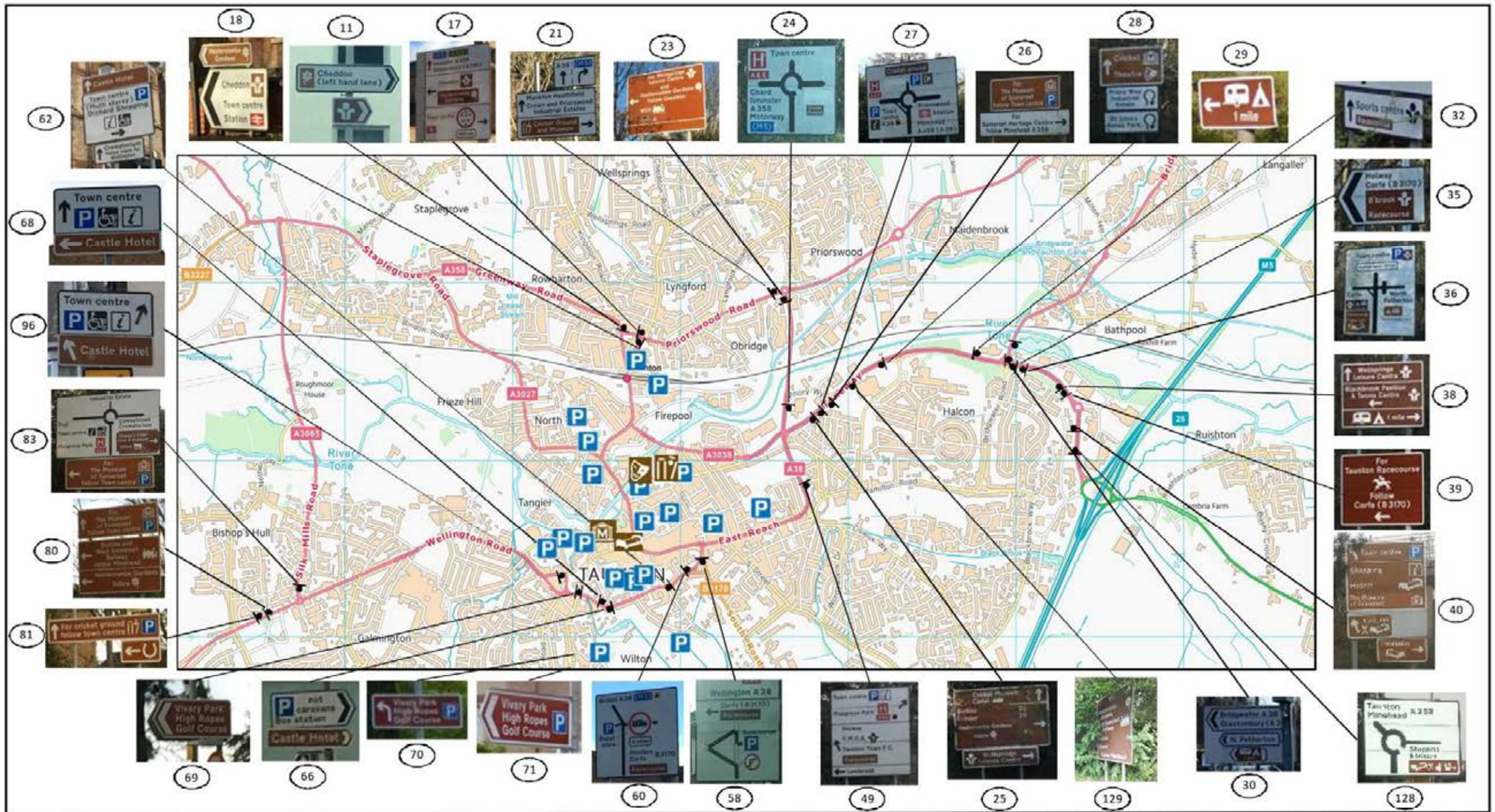
DATE
20/01/15

SCALE
Not to scale

PRODUCED BY
NJ

CHECKED
LP

APPROVED
LP



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CLIENT/PROJECT

SOMERSET COUNTY COUNCIL: TAUNTON TOWN CENTRE SIGNING STRATEGY

TITLE

EXISTING TOURIST SIGNS ON EXTERNAL ROUTES - TAUNTON DESTINATIONS

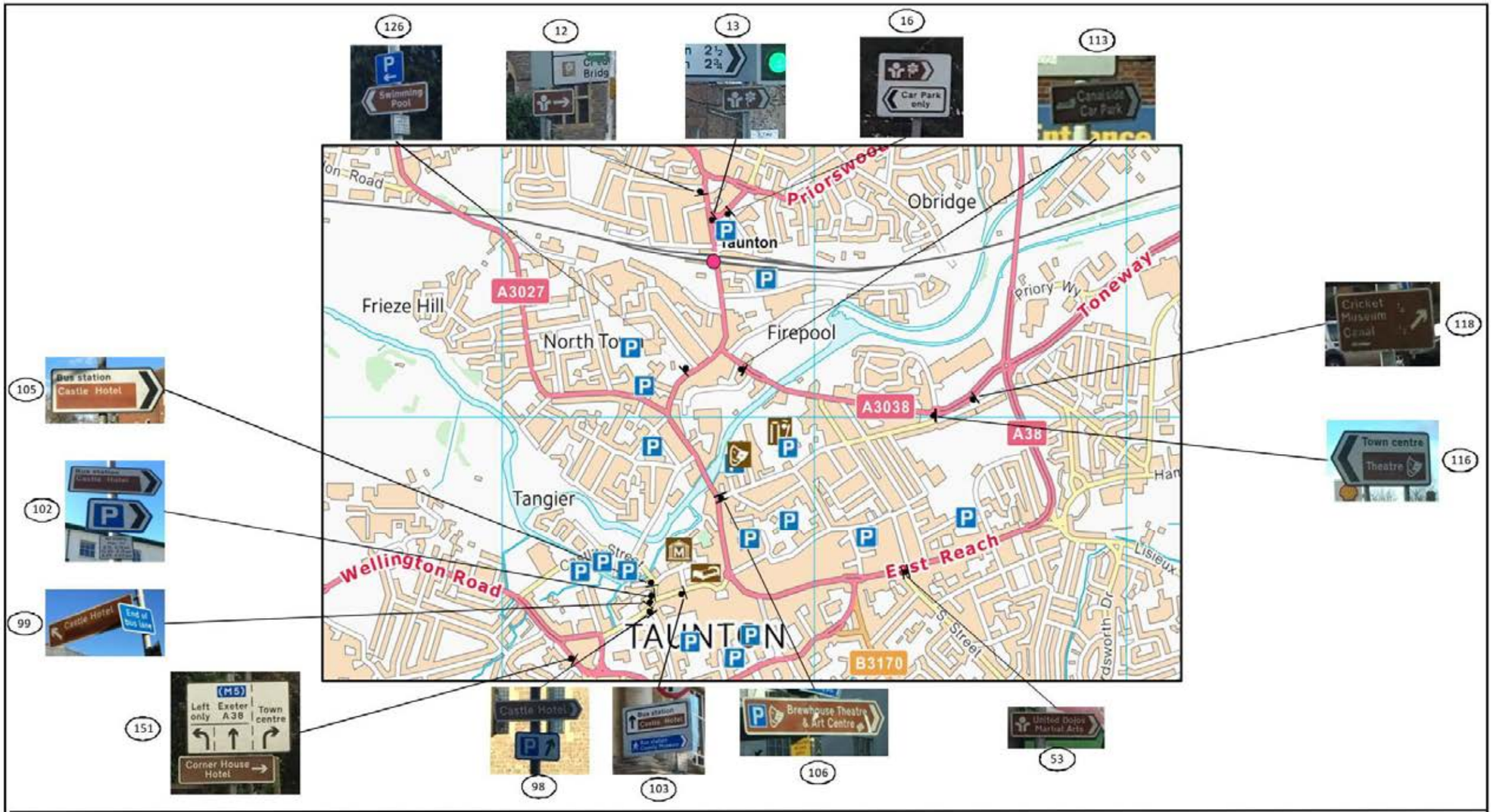
DATE
22/01/15

SCALE
Not to scale

PRODUCED BY
NJ

CHECKED
LP

APPROVED
LP



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CLIENT/PROJECT

SOMERSET COUNTY COUNCIL: TAUNTON TOWN CENTRE SIGNING STRATEGY

TITLE

EXISTING TOURIST SIGNS ON INTERNAL ROUTES - TAUNTON DESTINATIONS

DATE
22/01/15

SCALE
Not to scale

PRODUCED BY
NJ

CHECKED
LP

APPROVED
LP

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CLIENT/PROJECT

SOMERSET COUNTY COUNCIL: TAUNTON TOWN CENTRE SIGNING STRATEGY

TITLE

TOURIST SIGNS TO BUTLINS, WSR AND EXMOOR IN TAUNTON TOWN CENTRE

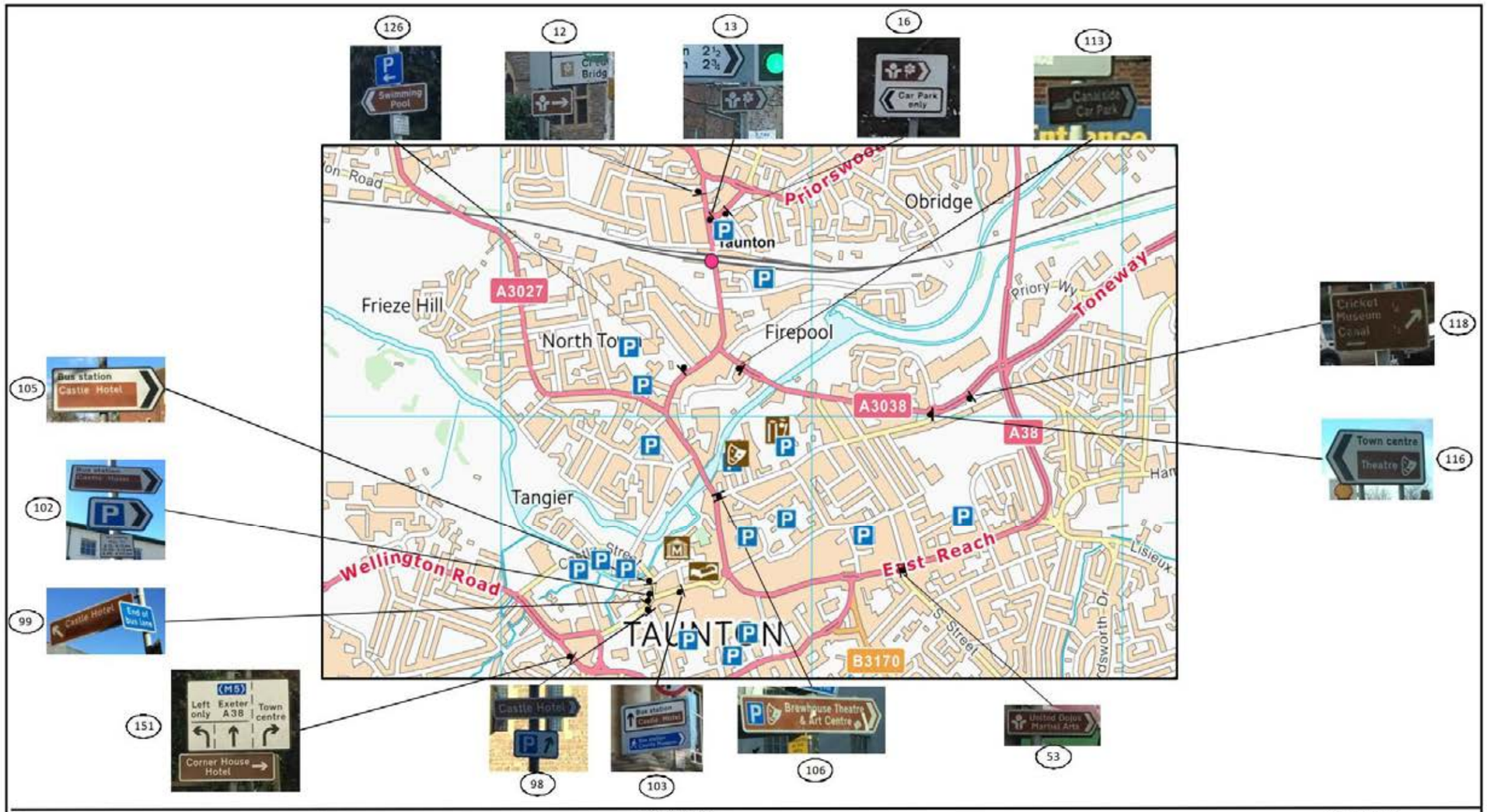
DATE
19/04/16

SCALE
Not to scale

PRODUCED BY
RP

CHECKED
LP

APPROVED
LP



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CLIENT/PROJECT

SOMERSET COUNTY COUNCIL: TAUNTON TOWN CENTRE SIGNING STRATEGY

TITLE

EXISTING TOURIST SIGNS ON INTERNAL ROUTES - TAUNTON DESTINATIONS

DATE
22/01/15

SCALE
Not to scale

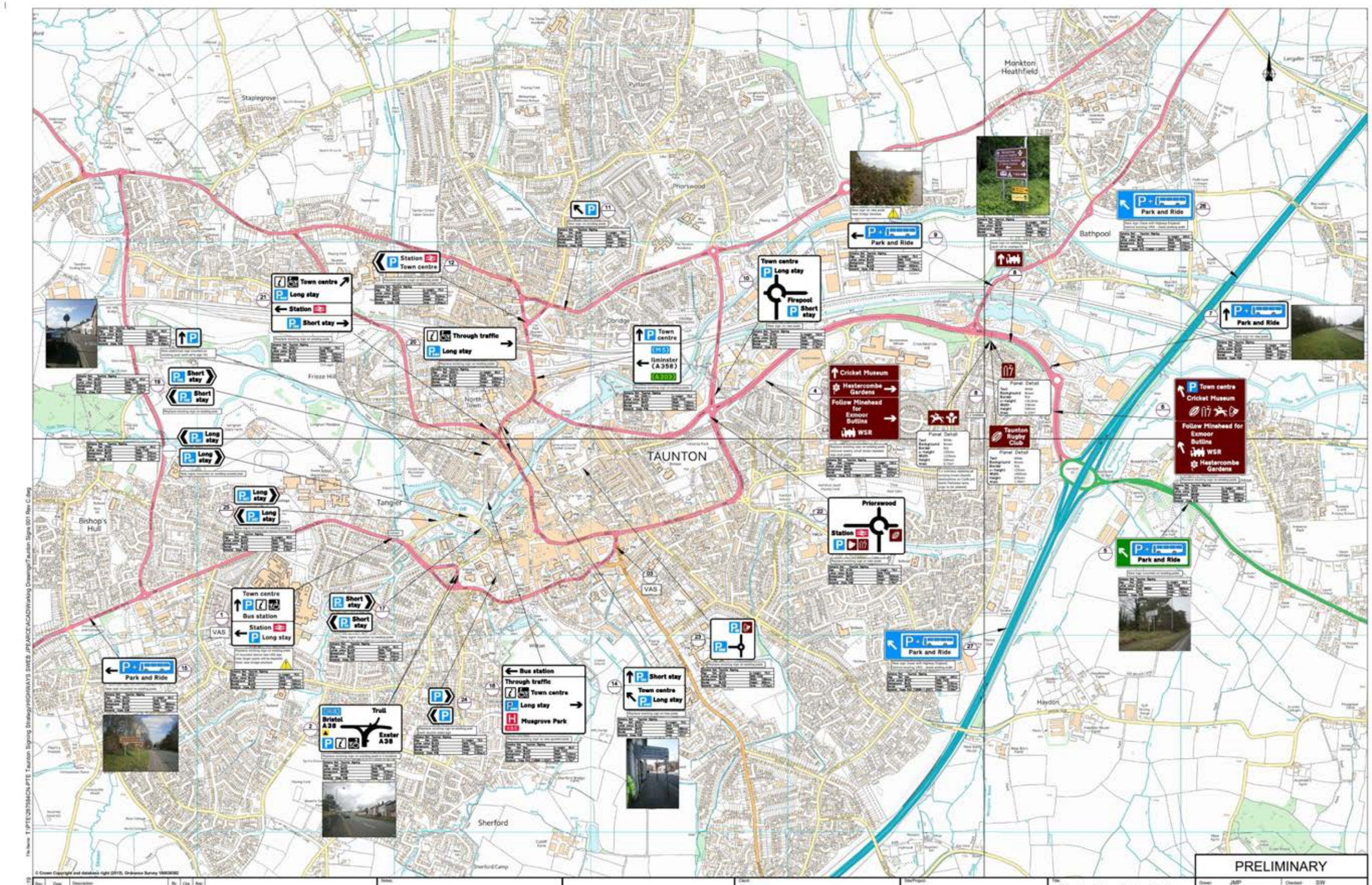
PRODUCED BY
NJ

CHECKED
LP

APPROVED
LP

Appendix C

PROPOSED SIGNING PROVISION



Rev	Date	Description	By	Chk	App
-	4/16	First Issue for Comment	JMP	SW	LP
A	4/16	Actioning Feedback	JMP	SW	LP
B	4/16	Actioning Feedback	JMP	SW	LP
C	4/16	Sign Ref 4 changes	JMP	SW	LP

Notes:

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Taunton
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TA1 4DY
TEL. (0845) 3459155
FAX. (01823) 358064
www.somerset.gov.uk

Site/Project:

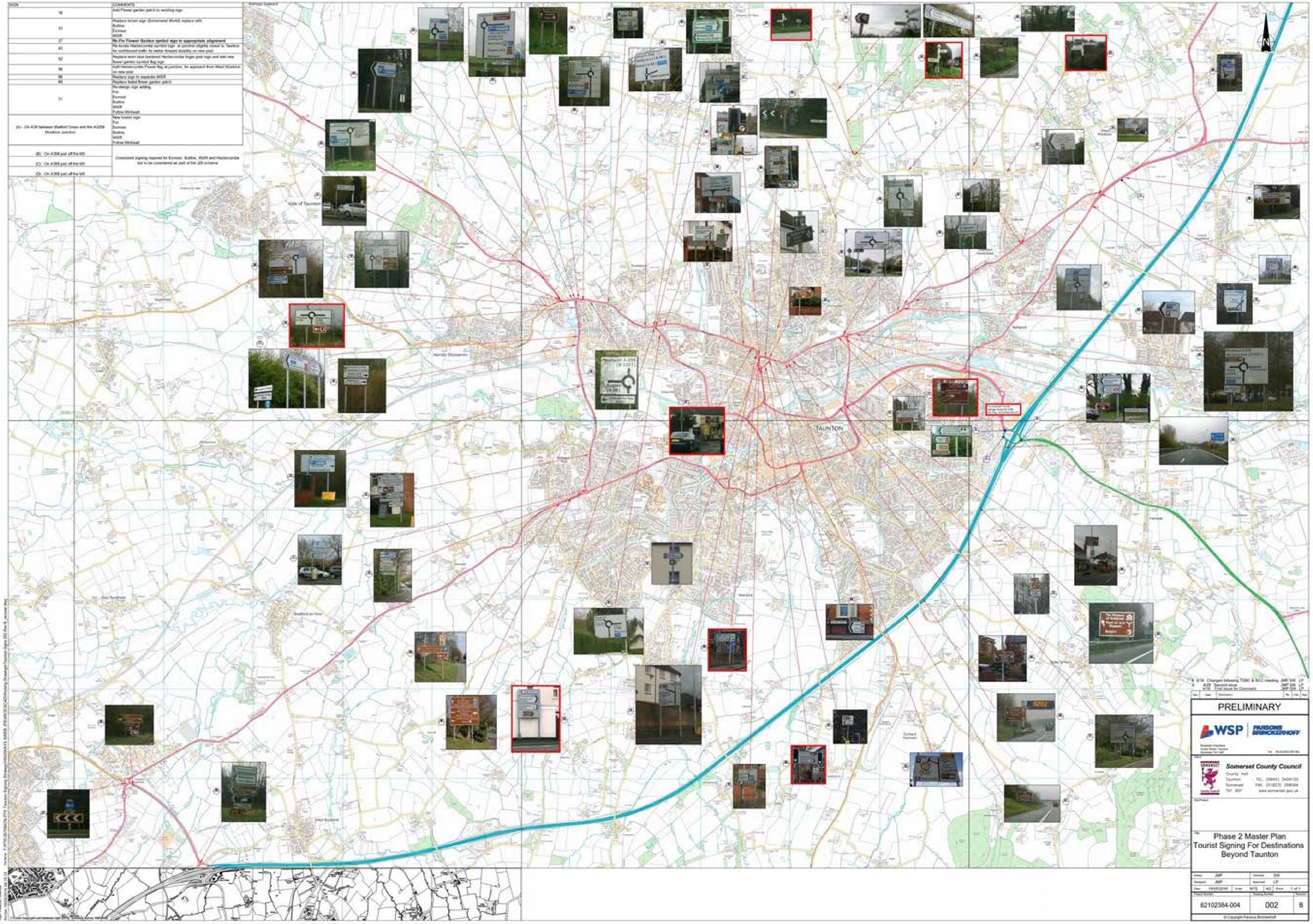
Title:
Master Plan of Car Parking & sign changes (Including some Tourist sign amendments)
Sheet 1

PRELIMINARY

Drawn:	JMP	Checked:	SW
Designed:	JMP	Approved:	LP
Date:	21/04/2016	Scale:	NTS
Project Number:		Drawing Number:	
62102384-004		001	C

File Name: T:\PTE\267584\CN-PTE Taunton Signing Strategy\HIGHWAYS SWEB JPEARCE\ACAD\Working Drawings\Taunton Signs 001 Rev C.dwg
Login: Pearce, Joshua
Plot Date: 22/04/2016 14:12:59

SIGN	COMMENTS
18	Add Flower garden patch to existing sign
33	Replace brown sign (Somerset World) replace with Butlins Exmoor WSR
37	**Re-Fix Flower Garden symbol sign to appropriate alignment**
43	Re-locate Hestercombe symbol sign at junction slightly closer to Taunton for northbound traffic for better forward visibility on new post
52	Replace worn blue bordered Hestercombe finger post sign and add new flower garden symbol flag sign
56	Add Hestercombe Flower flag at junction, for approach from West Monkton on new post
68	Replace sign to separate WSR
69	Replace faded flower garden patch
71	Re-design sign adding For Exmoor Butlins WSR Follow Minhead
(A) - On A38 between Walford Cross and the A3259 Monkton Junction	New tourist sign For Exmoor Butlins WSR Follow Minhead
(B) - On A358 just off the M5	Consistent signing required for Exmoor, Butlins, WSR and Hestercombe but to be considered as part of the J25 scheme
(C) - On A358 just off the M5	
(D) - On A358 just off the M5	



B 5/16 Changes following TDBC & SCC meeting JMP SW LP
A 4/16 Second issue JMP SW LP
- 4/16 First issue for Comment JMP SW LP

PRELIMINARY

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Phase 2 Master Plan
Tourist Signing For Destinations
Beyond Taunton

Drawn JMP | Checked SW
Designed JMP | Approved LP
Date 18/05/2016 | Scale NTS | A0 | Sheet 1 of 1

Project Number 62102384-004 | Drawing Number 002 | Revision B

Appendix D

SUMMARY OF PROPOSED CHANGES RECOMMENDED IN OPTION 3

Summary of proposed signing changes in the recommended option for implementation - Option 3

Location	Current sign/comments	Proposed content	Indicative cost	Status
Park & Ride signing				
Silk Mill Park & Ride				
A38 Wellington				
In advance of bus stop, opp crematorium		VMS – to state Park & Ride left with 600 spaces	Included in VMS	Covered in VMS Study
In advance of bus stop			£321	Preferred option
A358 (Minehead)				
Cross Keys	N/A – No further signing proposed. Note: Traffic Information VMS will be provided at Cross Keys	VMS – Traffic information	Included in VMS	Covered in VMS Study
Gateway Park & Ride				
A38 Bridgwater Road				
In advance of bridge over River Tone	Additional sign on new posts and near bridge structure		£384	Preferred option
A358 Toneway (eastbound)				
After current Parking layby but in advance of ADS	Additional sign on new posts		£506	Preferred option
A358 Ilminster				
In advance of turning into Park &		VMS – to state Park & Ride left with 1000 spaces	Included in VMS	Covered in VMS Study

Ride site				
In advance of turning into Park & Ride site	 New sign mounted on existing posts		£235	Preferred option
M5 southbound - Junction 25				
On verge on M5 slip road		VMS – to state Park & Ride left with 1000 spaces	Included in VMS	Covered in VMS Study
On M5 in advance of junction			£3337 costs may vary due to HE requirements	Preferred option but essential if agreement cannot be sought from Highways England regarding the placement of the proposed VMS signs
M5 northbound - Junction 26				
In advance of turning for junction 26		'For Taunton use P & R at 25'. Following initial consultation with Highways England, further work is required to decide exact signing and costs but it is recommended that some sort of signing is placed at this location.	£3337 - indicative, assumed to be same size and requirements as other M5 signing (costs may also vary due to HE requirements)	Preferred option
M5 northbound - Junction 25				
On verge on M5 slip road		VMS – to state Park & Ride right with 1000 spaces	Included in VMS	Covered in VMS Study
On M5 in advance of junction			£3337 indicative, assumed to be same size and requirements	Preferred option but essential if agreement cannot be sought from Highways

			as other M5 signing (costs may also vary due to HE requirements)	England regarding the placement of the proposed VMS signs
Location	**Current sign/comments**	**Proposed content**	**Indicative cost**	**Status**
Car Park signing				
A38 Wellington Road				
Approach to Castle Street junction	VMS to be plate sign and car park spaces displayed electronically	VMS – to state: Tangier (long stay) 444 left and Town Centre (short stay) 810 straight ahead	Included in VMS	Covered in VMS Study
Approach to Castle Street junction	Combine static sign with VMS as detailed above		£968	Required as part of VMS Study
Castle St opp entrance to Tangier	 Old sign to be replaced. Sign to be mounted on existing post.		£148	Required as part of VMS Study
Castle St opp entrance to Castle Street	Currently no sign into car park. Sign to be mounted on existing post.		£126	Required as part of VMS Study
Cann Street	 Currently decision point but not clear for those who have been following Town Centre ‘P’. Replace sign on existing post.		£778	Required as part of VMS Study

Upper High Street	 Remove as sign on route to 'Town Centre car parks' as signed by VMS and therefore could add to confusion.	N/A	Assumed to be a quick win and can be taken done by SCC Traffic Management Team	Required as part of VMS Study
A358 from J25				
A358 Toneway	Full colour VMS in advance of roundabout	VMS – to state: Firepool (short stay) 452 ahead Canon Street (short stay) 288 ahead Town Centre (short stay) 810 left	Included in VMS	Covered in VMS Study
A3038 Priory Ave	 Proposed NIDR sign shown	Add parking info to proposed NIDR signing. Need to liaise with NIDR team. Short stay (Canon Street to be signed left and Firepool straight ahead)	Cost not included as to be incorporated as part of NIDR sign	Required as part of VMS Study
Priory Ave/Canon Street junction			£216	Required as part of VMS Study
East Reach	VMS to be plate sign and car park spaces displayed electronically	VMS – to state: Orchard (short stay) 553 ahead High Street (short stay) 257 ahead Tangier (long stay) 444 ahead	Included in VMS	Covered in VMS Study

A38 Compass Hill	Currently no sign. Ensures that motorists are aware need to go straight ahead for long stay parking.		£177	Required as part of VMS Study
Priorswood				
A3259 Priorswood Road	Full colour VMS in advance of roundabout	VMS – to state: Firepool (short stay) 452 left Wood Street (short stay) 196 ahead Tangier (long stay) 444 ahead Town Centre (short stay) 810 left	Included in VMS	Covered in VMS Study
A358 Obridge	Currently no sign, therefore inconsistent with VMS proposals		£1323	Required as part of VMS Study
A3259 Priorswood Road		 Add to existing sign	£60	Required as part of VMS Study
Clifton Terrace			£159	Required as part of VMS Study
Station Road on approach to Staplegrove junction			£400	Required as part of VMS Study

Staplegrove Road				
Staplegrove Road/Chip Lane junction	VMS to be plate sign and car park spaces displayed electronically	VMS – to state: Wood Street (short stay) 196 right Tangier (long stay) 444 right Town Centre (short stay) 810 left Firepool (short stay) 452 left	Included in VMS	Covered in VMS Study
Staplegrove Road on approach to Station Road junction			£836	Required as part of VMS Study

REPORT N^{O} 70016926-100-001

TAUNTON CAR PARK VMS FEASIBILITY STUDY

MAY 2016

WSP | PARSONS BRINCKERHOFF

TAUNTON CAR PARK VMS FEASIBILITY STUDY

Somerset County Council

Project no: 70016926
Date: May 2016

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QUALITY MANAGEMENT

ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks		Client comments incorporated	Amended business case section	Minor amendments
Date	28/03/16	28/04/16	18/05/16	19/05/16
Prepared by	Ed Riches	Ed Riches	Ed Riches	Ed Riches
Signature	UKEJR002	UKEJR002	UKEKR002	UKEKR002
Checked by	Paul Warren	Paul Warren	Paul Warren	Paul Warren
Signature				
Authorised by	Katherine Bright			
Signature				
Project number	70016926-100	70016926-100	70016926-100	70016926-100
Report number	001	001	001	001
File reference	Taunton Car Park VMS feasibility Study 1v0.docx	Taunton Car Park VMS feasibility Study 2v1.docx	Taunton Car Park VMS feasibility Study 2v2.docx	Taunton Car Park VMS feasibility Study 2v3.docx

PRODUCTION TEAM

CLIENT

Assistant Director – Business Development Taunton Deane Borough Council	Ian Timms
Service Manager -Traffic Management Somerset County Council	Bev Norman

WSP GLOBAL INC. (WSP)

Director, Transportation	Katherine Bright
Senior Transport Planner, Transportation	Lydia Palmer
Technical Director, Intelligent Transport Systems	Paul Warren
Associate Director, Intelligent Transport Systems	Ed Riches

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1 EXECUTIVE SUMMARY

Taunton is the retail capital of Somerset with all the top names in shopping, eating and drinking, as well as a diverse mix of specialist and independent retailers. With excellent transport connections Taunton offers an attractive visitor and shopper destination. It is recognised that the planned future development of Taunton will only serve to increase visitor numbers.

A key facet of a great visitor experience will be easy and stress free car parking. There are a range of technical solutions that will help visitors make SMART choices. This report covers two aspects by

- examining the feasibility of improving the provision of parking space availability information at key points using a parking guidance system (PGI) and
- providing pay on foot (PoF) ticketing at Tangier, Canon Street, Wood Street, Castle Street, Enfield, Orchard and High Street Car parks.

The study has identified a scheme concept including participating car parks, routes to car parks, parking signage decision points for drivers and potential locations for electronic variable message signs (VMS). The scheme includes the following:

- Major town centre car parks [8] including new car park at Firepool development.
- Out of town, Park and Ride car parks [2].
- Variable Message Signs [10].

Real time counts of available spaces will be displayed on VMS from data obtained from participating car parks.

It is proposed that the system will be controlled from the existing Somerset County Council Urban Traffic Management and Control (SCC UTMC) system, supplied by Cloud Amber. This control and monitoring system will require some upgrading to enable data communication with car park counters and VMS. This will need to be implemented as a prerequisite to parking guidance system implementation.

Most car parks in the town are currently operated as Pay-and-Display car parks with no entry or exit counting. This study has considered installation of UTMC compliant car park counters at these car parks in order to acquire car park count of spaces data by the central system.

This study examined the feasibility of converting the two multi-storey car parks Orchard and High Street, and ground level Tangier, Castle Street, Enfield, Wood Street and Canon Street car park, to Pay-on-Foot operation. This will involve some physical changes to these car parks and introduction of Pay-on-Foot payment machines, entry and exit barriers and ticket dispensers/readers. Whilst this part of the study does not affect the general arrangement of the parking guidance system feasibility, it will have some impact on costs. The Pay-on-Foot part of this study forms part of this report.

Budgetary costs of all of the system components have been obtained from similar recent projects and relevant suppliers. The capital acquisition cost of the scheme is estimated to be **£ 1,057,120.**

This sum includes costs associated with converting the following Pay-and-Display car parks to Pay-on-Foot operation:

- Orchard (MSCP)

- High Street (MSCP).
- Tangier[1]
- Canon Street
- Wood Street
- Castle Street
- Enfield

It is anticipated that such a scheme could be designed, procured and installed within a programme timescale of approximately nine [9] months to twelve [12] months.

The results of the economic appraisal of the PGI and PoF scheme are:

Capital Acquisition Costs including 15 year equipment renewal and design and project management.	£3,242,447.27
Estimated Benefits over 15 year period	£42,153,728.57
Benefit Cost Ratio (BCR)	13

Table 1 - Summary economic appraisal for PGI and PoF systems

The BCR for the scheme is high; the study recommends that the PGI and PoF system funding approval be sought for scheme delivery in 2017/18.

A separate but related study, reviewing local fixed signage strategy has concluded costs for changes to the static signing as **£16,558** (Option 3 – All Park & Ride signing included and only required car parking).

[1] Tangier, Castle Street and Enfield surface car parks will form the "Tangier" group of car parks for display of aggregated counts of spaces by the Parking Guidance System.

2 INTRODUCTION

2.1 PARKING GUIDANCE VMS SYSTEM ARCHITECTURE

It is proposed to introduce a Parking Guidance VMS system for Taunton to direct motorists to public car parks that have available spaces and reduce unnecessary circulation and congestion.

Occupancy data for each car park in the scheme will be collected using inductive loop vehicle detectors installed in the entrances and exits of each participating car park. From knowledge of the car park spaces capacity and variable car park entry and exit counts, the number of available spaces can be calculated in near real-time by the parking guidance system.

The numbers of spaces can be displayed to motorists by way of Variable Message Signs located at the side of the road upstream of a decision point e.g. road junction.

For this study, only individual or composite car parks (group of car parks) having largest capacities have been included for parking guidance. These are listed below in Chapter 3 and have been surveyed to understand the entry/exit layouts and how many loop detectors will be required to monitor number of spaces.

Most car parks in Taunton are operated as Pay & Display car parks and do not have existing entry/exit barriers or counting equipment. Realignment of some car park entrances will be necessary to ensure vehicles entering and exiting do so in a non-conflicting manner and can be counted using either omnidirectional (or in exceptions bidirectional) inductive loop detectors cut into the road surface.

The two Park and Ride car parks are understood to have their own Parking Management Systems and therefore should be able to provide car park spaces data via a suitable system-to-system interface. However, on further investigation it is found that only incoming vehicles are counted. Separate in/out loop counters will therefore be required at both Park and Ride sites.

The proposed new car park at the Firepool development is expected to be operated by the owner as Pay-on-Foot and have its own Parking Management System. Firepool car park should not require any other car park counting equipment as counts of spaces should be possible to be obtained from the Firepool Parking Management System via a system-to-system link.

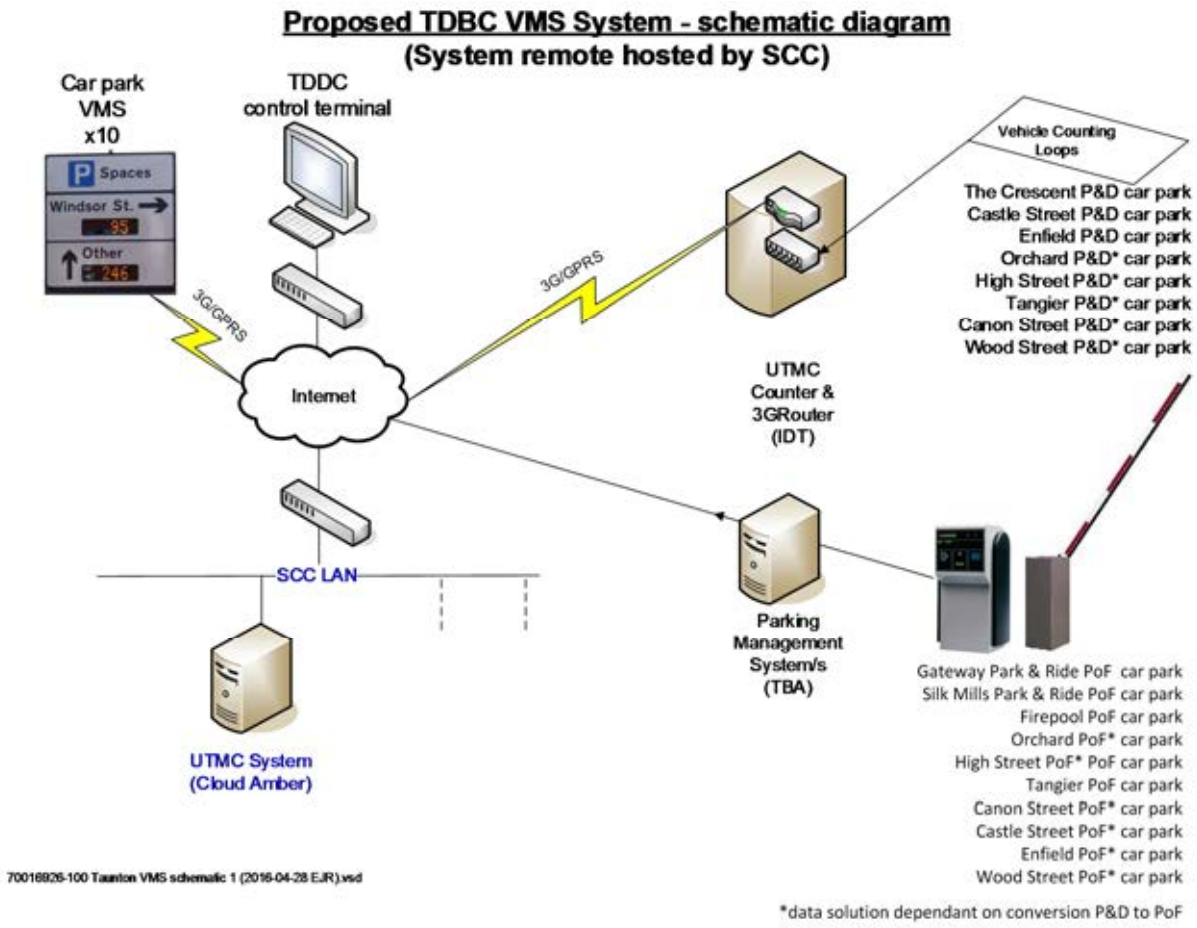
Conversion of Orchard Multi Storey Car Park (MSCP), High Street MSCP's and Tangier car park to Pay-on-Foot operation is being investigated by TDBC. Separate counting equipment has been included for these car parks at this time. However, it may therefore be possible to obtain counts of spaces for these 3 car parks by way of their Parking Management System/s and omit the separate entry/exit counters.

It is proposed to exploit the capability of the Somerset County Council UTMC (Urban Traffic Management and Control) system to collect and process car park counts and to output spaces messages to UTMC compliant Variable Message Signs.

It is understood that the SCC UTMC system will require minor upgrading of modules to add the functionality for car park counting and VMS control. A cost estimate has been included as part of the study.

Input data communications between car park counters equipment and the UTMC central system can be 3G/GPRS wireless, using a suitable 3G Router and SIM card. Output data communications between the UTMC central system and Variable Message Signs can also be 3G/GPRS wireless, using a suitable 3G Router and SIM card.

An outline schematic diagram of the system architecture is shown below: -



3 CAR PARKS

The original scope of study included five car parks, including the largest town centre sites, which would participate in the Taunton parking guidance scheme. These are highlighted in bold in table 2.

During consultation with TDBC, additional car parks were added, including but not limited to both Park and Ride sites at the edge of the Town and the proposed Firepool development car park.

Also to simplify signage and comprehension of choices by motorists entering the town, grouping of car parks were considered. It was agreed that grouped car parks will be displayed together with their aggregated number of available spaces on the Car Park Occupancy VMS.

	Car Park [spaces]	**Car Park Group [aggregated spaces]**
1	**Wood Street [196] - Short stay**	
2	Canon Street [288] –Short stay	
3	**The Crescent [226]** ***not included in scheme***	Town Centre [810]
4	**High Street [257] - Short stay**	
5	**Orchard [553] – Short stay**	
6	**Tangier [247**] – Long stay	Tangier [444]
7	Enfield [197] – Long stay	
8	Castle Street [70] – Short stay	
9	Firepool [452] – Long stay	
10	Gateway PnR [1000]	
11	Silk Mills PnR [600]	

Table 2, Taunton Town Centre Car Parks

Surveys were undertaken to identify the numbers of entry and exit lanes to each of the car parks. This information was used to determine quantity, type and potential locations of car park counter equipment used to count vehicles in and out of each car park.

3.1 WOOD STREET

Wood Street car park is a ground level Pay & Display car park located towards the North West of the town centre. The car park is accessed predominantly via two routes. The car park itself has a single two lane car park entry/exit. It should be noted that a small cabinet site will be required for housing the vehicle counting equipment. Electrical power can be sourced from the electrical power supply to the ticket car park ticket machines[2] or from the car park CCTV site. This will require excavation of small trench across the car park and reinstatement of the road surface when complete.

Figure 1, Wood Street Car Park Entrance

3.2 CANON STREET CAR PARK

Canon Street car park is a ground level Pay & Display car park, located towards the North East of the town. The car park is accessed predominantly via one route. The car park has a single two lane car park entry/exit.

Figure 2, Canon Street Car Park overview with location of count loops

[2] Detailed assessment of location of electrical power supply has not be carried out at this stage

This car park is complicated by there being a private (business) car park, which is accessed through the public car park. Private parking would be counted in and out of the public car park so must be discounted by additional vehicle counting equipment located at the private car park entry/exit location.

Figure 3, Canon Street Car Park entrance and private car park entrance

It should be noted that a small cabinet site will be required for housing the vehicle counting equipment. Electrical power can be sourced from the electrical power supply to the ticket car park ticket machines[3] or from the car park CCTV site. This will require excavation of small trench across the car park and reinstatement of the road surface when complete.

3.3 THE CRESCENT CAR PARK

The Crescent Car Park poses a number of challenges due to the layout and also the presence of a segregated supermarket car park in the centre of the public car park. A decision has been made by TDBC not to include this short-term car park in the Parking Guidance Scheme.

3.4 HIGH STREET CAR PARK

High Street car park is a multi-storey P&D car park towards south of Town Centre. The car park is accessed predominantly via one route. The car park has 1 entry lane and 2 exit lanes, although one exit lane is marked “NO EXIT”. It should be noted that the condition of the redundant infrastructure is poor on the entrance to the car park. It is recommended that this is removed and the pavement and road area reinstated.

For the purposes of the study it has been assumed that access to suitable electrical supply will be fairly straight forward. However existing cable duct routes may have collapsed or crowded with existing cables. Existing cabinet foundations could be used to locate the vehicle counting equipment cabinet. However, it should be noted that externally these foundations were in poor condition and will require replacing as part of the works.

[3] Detailed assessment of location of electrical power supply has not be carried out at this stage

Figure 4, High Street car park entrance and exit lane views

There is a separate ground level private car park at the rear of the back of the site, reached only by driving through the MSCP. Were this car park to remain as Pay-and-Display then an extra entry/exit counter would be required to discount private parking occupancy transitions from the main public car park counts.

Figure 5, Private car park at rear of High Street MSCP

High Street MSCP may be converted to a Pay-on-Foot car park. It could then be possible to obtain car park occupancy counts from the parking management system instead of separate in/out vehicle counting equipment. For Pay-on-Foot operation, car park count of spaces at would be obtained from a data link to the Pay-on-Foot system. The Pay-on-Foot system will measure occupancy from barrier or loop transitions. A separate set of exit/entry barriers would need to be installed to count into and out of the private car park and these vehicles then discounted from the public parking occupancy count.

3.5 ORCHARD CAR PARK

Orchard car park is a multi-storey P&D car park towards south of City Centre. This car park is adjacent to High Street MSCP and together forms one of the highest capacity parking areas in the town centre. The car park has 2 entry lanes and 3 exit lanes, there is evidence of previous barrier entry systems in place. It should be noted that the condition of the redundant infrastructure is poor it is recommended that this is removed and the pavement and road area reinstated.

Figure 6, Orchard Car Park entry and exit points.

For the purposes of the study it has been assumed that access to suitable electrical supply will be fairly straight forward. However existing cable duct routes may have collapsed or crowded with existing cables. Existing cabinet foundations could be used to locate the vehicle counting equipment cabinet. However, it should be noted that externally these foundations were in poor condition and may require to be replaced as part of the works.

The entrance to both Orchard and High Street Car Parks is through a single access road called the Old Pig Market. Potentially Orchard MSCP could be converted to a Pay-on-Foot car park. It may then be possible to obtain car park occupancy counts from the parking management system instead of separate in/out vehicle counting equipment.

3.6 TANGIER CAR PARK

Tangier car park is a ground level P&D car park towards West of Town Centre. The car park is accessed via Castle Street in an east or west bound direction. The car park has a single two lane car park entry/exit. Extension and realignment of the curb and pavement at this entrance will be required to enable accurate vehicle counting, refer figure 7, the green shape indicates the area that could require changes.

Figure 7, Entrance to Tangier Car Park

Potentially Tangier car park may be converted to a Pay-on-Foot car park. It may be possible to obtain car park occupancy counts from the parking management system instead of separate in/out vehicle counting equipment.

As evident from the photo above, some redesign of the physical entry/exit to this car park would be necessary to create an off street pull-in and an island to house ticket dispensers, ticket readers and barriers. During the survey it was noted that this car park includes coach parking and also a waste recycling point.

It should be noted that a small cabinet site will be required for housing the vehicle counting equipment. Electrical power can be sourced from the electrical power supply to the ticket car park ticket machines[4]. This will require excavation of small trench across the car park and reinstatement of the road surface when complete.

3.7 ENFIELD CAR PARK

Enfield Car Park is a ground level P&D car park towards West of Town Centre. It sits between Castle Street and Tangier car park with single two lane entry and exit access. The car park can be accessed eastbound or westbound from Castle Street.

The car park entrance layout should be fairly straightforward for installing vehicle counting equipment. It should be noted that a small cabinet site will be required for housing the vehicle counting equipment. Electrical power can be sourced from the electrical power supply to the ticket car park ticket machines[5]. This will require excavation of small trench across the car park and reinstatement of the road surface when complete.

Figure 8, Enfield Car Park Entrance

[4] Detailed assessment of location of electrical power supply has not be carried out at this stage
[5] Detailed assessment of location of electrical power supply has not be carried out at this stage

3.8 CASTLE STREET CAR PARK

Castle Street car park is a P&D car park towards West of Town Centre. The car park is accessed via Castle Street; the car park itself has a single 2-lane car park entry/exit.

The car park entrance layout should be fairly straightforward for installing vehicle counting equipment. It should be noted that a small cabinet site will be required for housing the vehicle counting equipment. Electrical power can be sourced from the electrical power supply to the ticket car park ticket machines[6]. This will require excavation of small trench across the car park and reinstatement of the road surface when complete.

Figure 9, Castle Street Car Park entrance

3.9 GATEWAY PARK AND RIDE (EAST)

Gateway Park and Ride is a PoF car park located east of M5 J25 and is accessible via A358. The car park itself has a single lane car park entry and separate lane exit, ignoring segregated bus entry and exit lanes. The car park has entry lane only vehicle loop detection. It is understood that the car park has a Parking Management System which should be possible to interface with and extract real-time occupancy or spaces data. For the purpose of this study it is assumed new entry and exit counter loops will be needed.

3.10 SILK MILLS PARK AND RIDE (WEST)

Silk Mills Park and Ride is a PoF car park located west of the Town Centre and is accessible on the A3065 Silk Mills road.

The car park has a single lane car park entry and separate single lane exit, ignoring segregated bus entry and exit lanes. The car park has entry lane only vehicle loop detection. It is understood that the car park has a Parking Management System which should be possible to interface with and extract real-time occupancy or spaces data. For the purpose of this study it is assumed new entry and exit counter loops will be needed.

[6] Detailed assessment of location of electrical power supply has not be carried out at this stage

3.11 FIREPOOL CAR PARK

Firepool car park will be located in close proximity of the town centre. Once developed it is expected that this car park will be PoF and served by a Parking Management System. It should therefore be possible to interface with and extract real-time occupancy or spaces data.

3.12 CAR PARK COUNTER REQUIREMENTS

The site survey enabled an assessment of the number and type of car park vehicle counters required for car parks identified. Table 3, shows the breakdown of equipment type for each car park. It should be noted that at this stage inductive loops placed in the road surface are used to sense individual vehicles and pass this information back to the vehicle counting equipment house in a small external cubicle located in close proximity of the car park entrance.

There are two forms of inductive loop configuration. Dedicated lane entry loops are used where vehicle will travel in single direction; bi-directional loops are used where vehicles may travel in both directions. For the purposes of the study it has been assumed that commercial mobile wireless data networks will be used to relay data from the vehicle counters to the car park occupancy system operated by the UTMC system.

	1	2	~~3~~	4	5	6	7	8	9	10	11	
	Canon Street	Wood Street	~~The Crescent~~	Orchard	High Street	Tangier	Castle Street	Enfield	Silk Mills P&R	Gateway P&R	Firepool	Total
Entry Lanes	2	1	~~2~~	2	1	1	1	1	1	1	PMS	
Exit Lanes	2	1	~~2~~	3	2	1	1	1	1	1	PMS	
Bi-Directional Lanes	1	2	~~1~~	0	0	1	0	0	0	0		
Number of Loops	4	4	~~5~~	5	3	3	2	2	2	2		27
Counter Modules	1	1	~~2~~	2	1	1	1	1	1	1	PMS	10
Wireless Routers	1	1	~~1~~	1	1	1	1	1	1	1		9
Cabinet	1	1	~~1~~	1	1	1	1	1	1	1		9

Table 3, Car park vehicle counter requirements

Table 4, illustrates an order of cost estimate for provision of car park vehicle equipment including loop construction. The cost estimate includes procurement of mobile data SIMS for 24-month period.

	Qty	Unit	Total
Loops & slot cutting	9	£1,000.00	£9,000
Counter Modules	10	£2,400.00	£24,000
Wireless Routers	9	£950.00	£8,550
Cabinet & PDU	8	£500.00	£4,000
Airtime (24months)	9	£192.00	£1,728
Delivery	1	£85.00	£85
			£47,363

Table 4, Cost Estimate for car park occupancy counter provision

4 PARKING GUIDANCE DECISION POINTS

4.1 CAR PARK GUIDANCE BOUNDARIES

The key to effective car park guidance is delivery of car park space availability information at key drive decision points along the main arterial corridors into Taunton Town Centre. WSP | PB have examined the key travel routes into Taunton town centre in the "Taunton Town Centre Routing and Signage Scoping Report". The overview plan has been extracted from this report to identify the key arterial routes into the town centre, please refer figure 10. This diagram was used to identify the key car park decision points and will be used to define most effective location for electronic VMS.

This study has identified two strategic outcomes for the car park guidance system. In summary they are:

- Improve visitor experience of Taunton by provide timely and accurate available town centre car park space information clearly at key decision points on arterial routes into Taunton.
- Provide the means to adapt guidance information based on demand of town centre car parks and the capacity of park and ride facilities in Taunton.

Decision points refer to traffic junctions or roundabouts where directions differ to car parks and the driver needs to make a decision as to which car park to head towards. Signage needs to be located upstream of the decision point to allow sufficient time to read, understand and make a decision regarding direction, including time for safe lane changing as necessary.

For the purposes of the study we have identified ten decision points illustrated in figure 10, and summarised them below:

- (1) West bound on the A358, approaching Gateway Park and Ride site – this is a decision point between using the Gateway Park and Ride or Town Centre car parks,
- (2) North bound exit slip of M5 J25 – this is a decision point between using the Gateway Park and Ride or Town Centre car parks,
- (3) South bound exit slip of M5 J25 – this is a decision point between using the Gateway Park and Ride or Town Centre car parks,
- (4) A358 Toneway westbound approach to A3038 / A358 / Chritchard Parkway roundabout – this is a decision point between using Firepool, Canon Street and Town Centre car parks,
- (5) A38 East Reach westbound approach this is a decision point between using nearby Orchard and High Street MSCP's and more distant Tangier car park,
- (6) A3259 Priorswood Road westbound approach to A358/A3259 roundabout next to Premier Inn Taunton central North – this is a decision point between using Firepool, Canon Street and Town Centre car parks,
- (7) A3027 Staplegrove Road /Chip Lane roundabout south bound approach to roundabout – this is a decision point between using Firepool, Tangier, Wood Street and Town Centre car parks,
- (8) A38 Wellington / Castle Street junction eastbound approach to the junction – this is a decision point between using Tangier and Town Centre car parks,
- (9) A38 Wellington New Road / Silk Mills eastbound approach to roundabout – this is a decision point between using Tangier, Town Centre car parks or Silk Mills Park & Ride.

- (10) Crosskeys eastbound approach to roundabout – this is a decision point between using Tangier, Town Centre car parks or Silk Mills Park & Ride.

4.2 ROUTING OUTER AREA CAR PARKS

The parking guidance system will enable different parking strategies to be deployed; the most likely scenario will be applying strategies that focus on guiding visitors firstly to town centre car parks as these are where motorists are likely to circulate trying to locate spaces.

Visitors traveling on the arterial routes outside of the town centre will receive parking guidance at decision points offering directions either as fixed “alternative car park” signage or showing number of available spaces compared for grouped town centre car parks.

This can be supplemented with guiding visitors to both Park and Ride sites at Silk Mills to the west and Gateway to the east as this may offer acceptable alternatives during peak demand for both commuting and visitor parking.

The use of multi-function colour matrix VMS at outer decision points will provide the means to deliver additional Traffic Information, including diversion and incident information which can be invoked at a higher priority, overriding parking guidance information.

4.3 ROUTING TO CENTRAL AREA CAR PARKS

As visitors travel towards the town centre guidance information will become more granular with car park space availability shown for individual car parks.

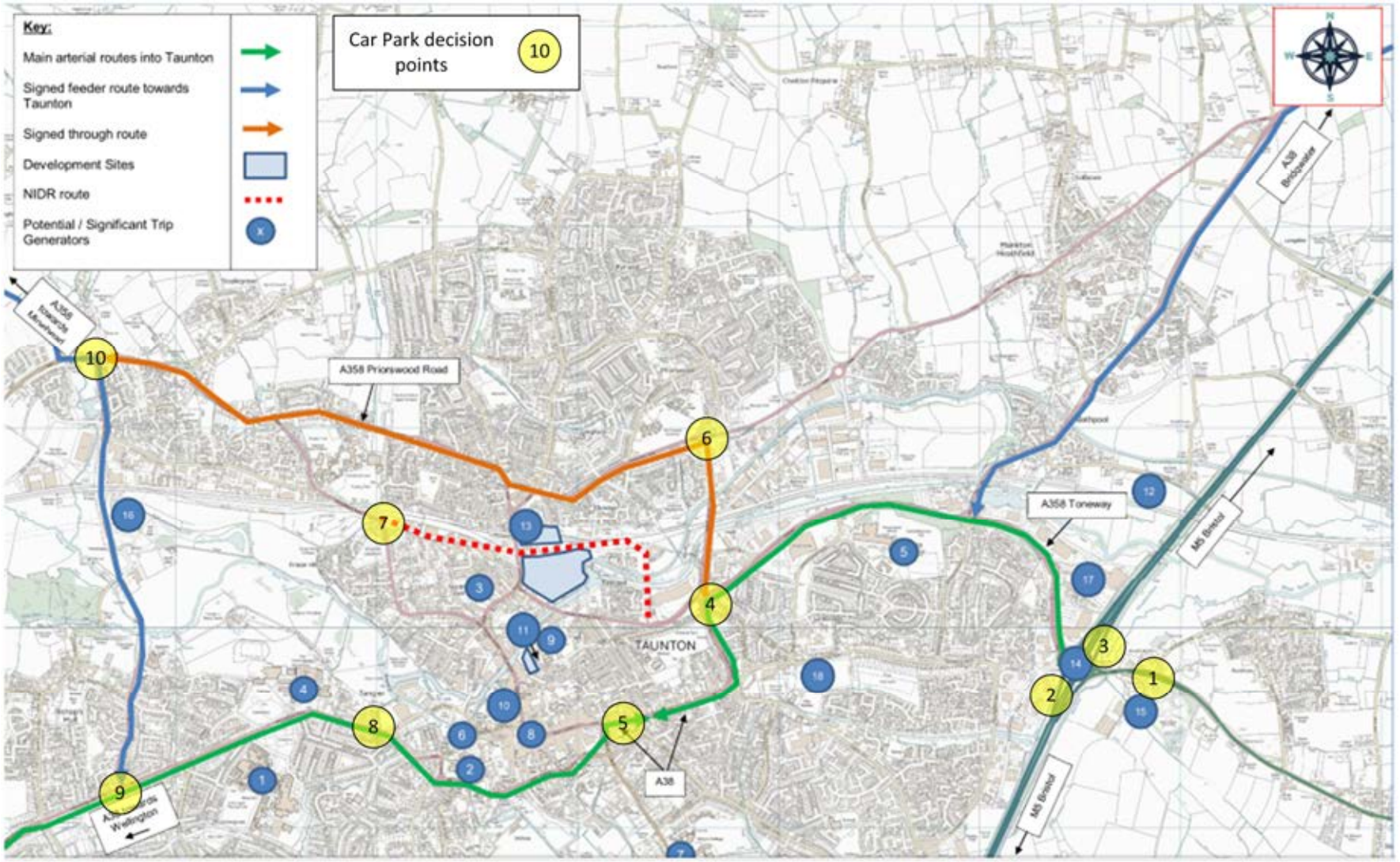


Figure 10, Car trip routes and decision points

5 POTENTIAL SIGN LOCATIONS

5.1 OVERVIEW

Identification of parking guidance decision points enabled examination of sign potential locations. Sign site surveys were conducted to identify potential locations upstream of the decision points.

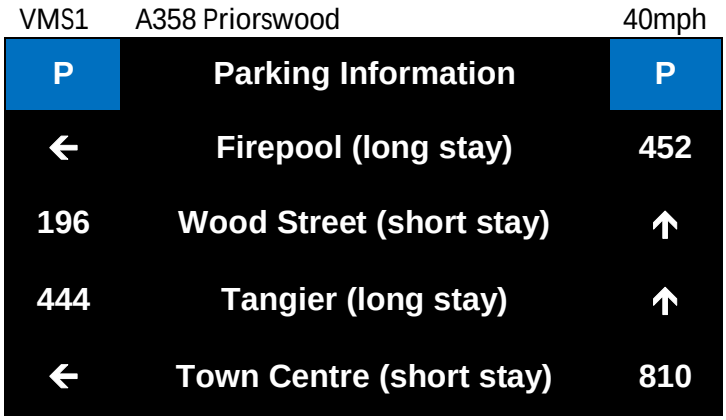
The following criteria were used in selecting potential sign locations:

- Sufficient journey time upstream of junction.
- Adequate space on verge/pavement to install sign post/s and sign.
- Absence of other sign clutter or other driver distractions.
- Probability of ready access to an electrical power supply source.

Some sites surveyed showed existence of other fixed signage. In these cases, the location of VMS shall be coordinated with the overall signage strategy for the town and potential re-location of smaller (and lower priority e.g. tourist information) fixed signage to elsewhere.

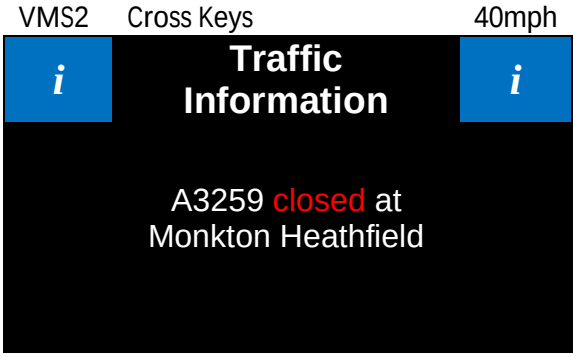
5.2 VMS1. A358 PRIORSWOOD ROAD

A full colour VMS is proposed for this site. Spaces will be displayed for Firepool, Wood Street car parks, also Tangier and Town car park groups.



5.3 VMS2. CROSS KEYS

A full colour VMS is proposed for this site. It is not proposed to display specific car park spaces information at this location, but use the sign for Traffic Information and general directions.

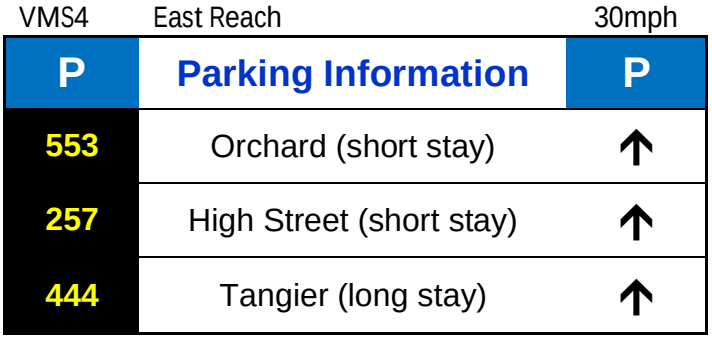


5.4 VMS3. A358 TONEWAY

A full colour VMS is proposed for this site. Spaces will be displayed for Firepool, Wood Street car parks, also Tangier and Town car park groups.

5.5 VMS4. EAST REACH

A Plate Sign with VMS elements is proposed for this site. Spaces will be displayed for nearby Orchard and High Street MSCP's and more distant Tangier car park.

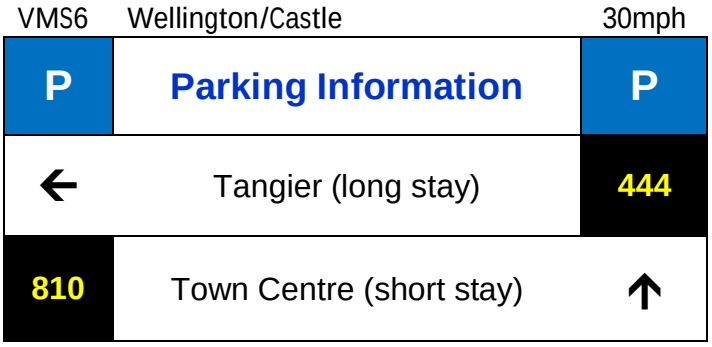


5.6 VMS5. A38 WELLINGTON NEW ROAD / SILK MILLS

A full colour VMS is proposed for this site. Spaces will be displayed for the Silk Mills Park & Ride car park.

5.7 VMS6. A38 WELLINGTON / CASTLE STREET

A Plate Sign with VMS elements is proposed for this site. Spaces will be displayed for Tangier and Town groups of car parks, not individual car parks.



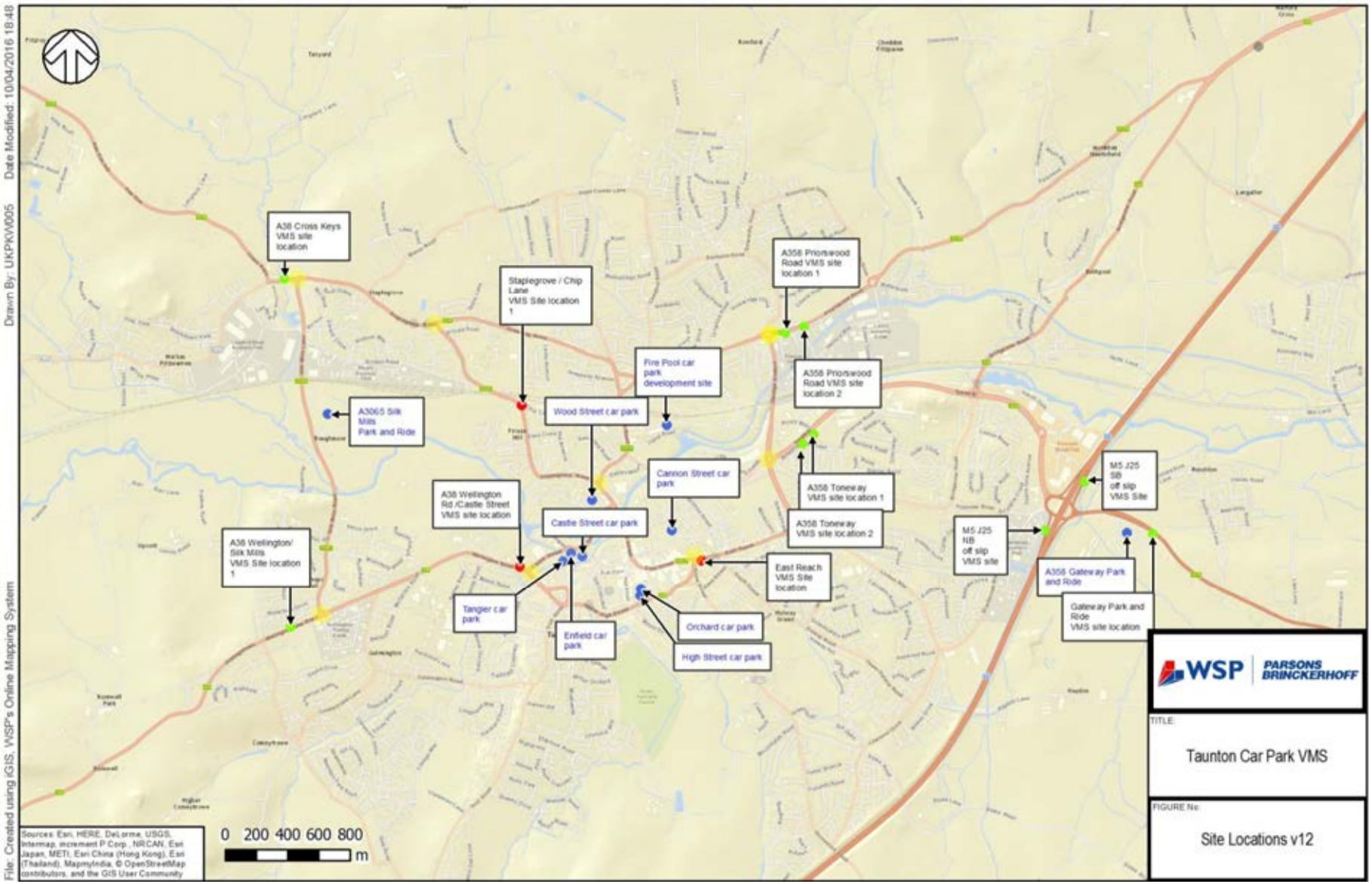
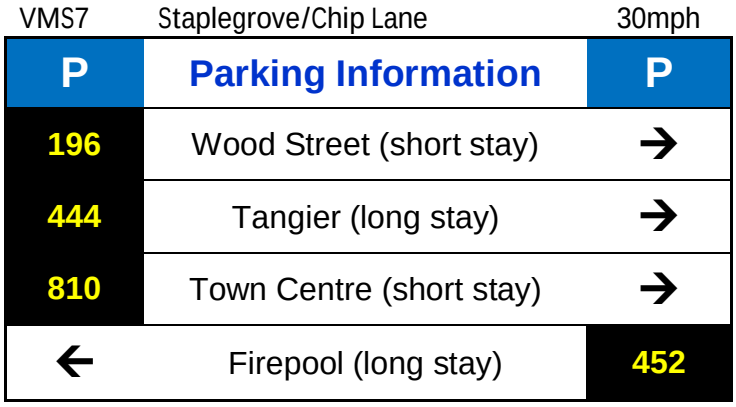


Figure 11, Car Parks, Decision points and potential VMS locations.

5.8 VMS7. A3027 STAPLEGROVE / CHIP LANE

A Plate Sign with VMS elements is proposed for this site. Spaces will be displayed for Wood Street car park, Tangier group of car parks and Firepool car park.

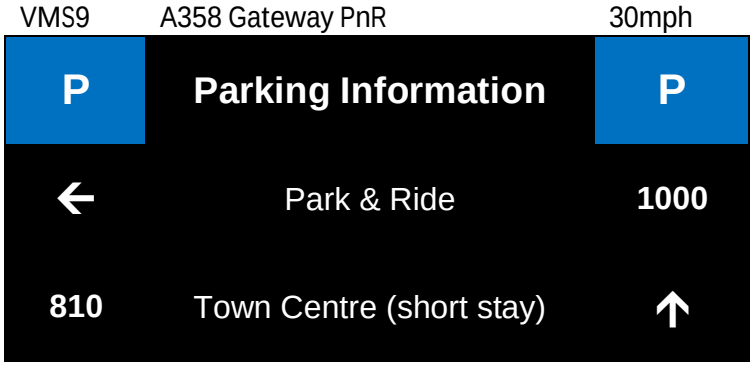


5.9 VMS8. UPPER HIGH STREET EASTBOUND

A VMS showing information for Orchard and High Street MSCP's, it was decided by TDBC to exclude this location.

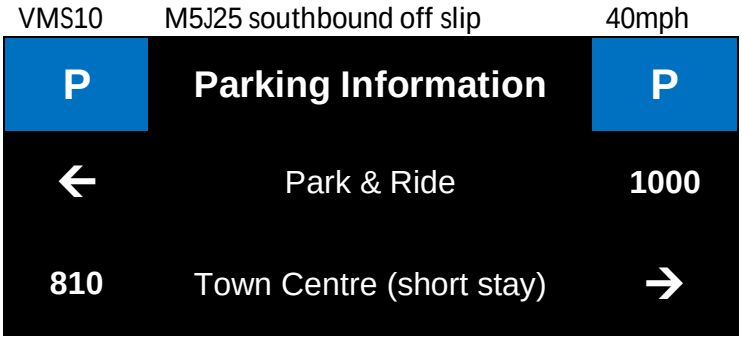
5.10 VMS9. A358 GATEWAY PARK AND RIDE

A full colour VMS is proposed for this site. Spaces will be displayed for Gateway Park & Ride car park and the Town group of car parks.



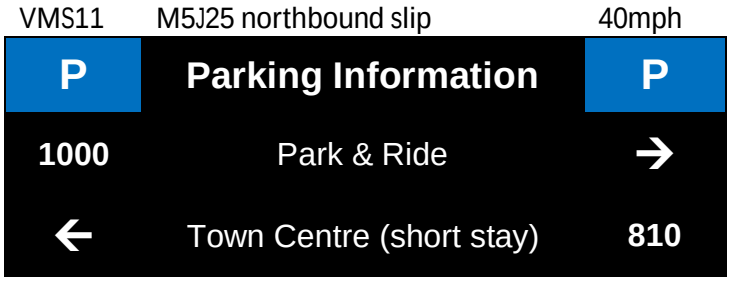
5.11 VMS10. M5 J25 SOUTHBOUND OFF SLIP

A full colour VMS is proposed for this site. Spaces will be displayed for Gateway Park & Ride car park and the Town group of car parks.



5.12 VMS10. M5 J25 NORTHBOUND OFF SLIP

A full colour VMS is proposed for this site. Spaces will be displayed for Gateway Park & Ride car park and the Town group of car parks.



6 CAR PARK GUIDANCE SYSTEM

6.1 UTMC CENTRAL SYSTEM

Somerset County Council operates an Urban Traffic Management and Control (UTMC) system supplied by Cloud Amber (an idox group company). This includes a UTMC Common Database, which can store car park counts of spaces.

The UTMC system can support car park guidance functionality. However, it will require development of Adapter software for integrating:

- Car Park Vehicle Counters
- Parking Management System
- VMS control (i.e. latest UTMC VMS MIB)

In addition, the UTMC system should have pre-installed software functionality to enable counts of available spaces to be calculated and stored for car parks and groups of car parks.

The UTMC system shall obtain, process and store car park counts from specific UTMC Car Park Counters (e.g. IDC) and defined Parking Management System/s (e.g. WPS, SkiData etc). It is expected that counts of spaces will be collected from each car park in near-real-time i.e. every 1 minute.

The UTMC system shall output car park space availability counts to VMS at 5 minutes' intervals or as otherwise agreed to balance system data latency and data usage cost of mobile data communication services.

The UTMC system shall include software configuration tools that allow users to define car park groups from a list of discrete car parks providing spaces data. e.g. Town Centre car parks group.

The software shall allow simple arithmetic manipulation of car park spaces data. As a minimum this shall allow spaces from one car park to be subtracted from another, e.g. to discount spaces where vehicles enter one car park to reach another (e.g. Canon Street Car Park). Also to add counts of spaces from specific car parks and store result for group car park (e.g. Town Centre =Orchard + High Street)

Where permitted by the VMS type, the UTMC system shall allow traffic information, incident or event information to be displayed. This will be activated by the SCC traffic control operator, either by selection of predefined signalling plans or by directly typing message into the UTMC system.

6.2 DATA COMMUNICATION INFRASTRUCTURE

During the study, a number of data communication options where considered for connecting car park occupancy counters, roadside VMS to the UTMC control system. In summary they were:

- TDBC fibre optic network
- Taunton Wi-Fi network
- Mobile data networks

The TDBC fibre optic network offers dedicated bandwidth for equipment connectivity, the proximity of the fibre optic network will require civil, electrical and specialist termination work in order to extend the fibre optic network to roadside equipment. At this stage it was considered that

that both the use of Taunton Wi-Fi network or3rd party mobile data network provide a more cost effective connection solution which require less civil infrastructure work.

Potentially the Taunton Wi-Fi network could provide data connection of car park occupancy counters, VMS to the UTMC system. At this stage it was considered that elements of the Taunton Wi-Fi network would require additional network equipment and antennas to expand coverage to provide this connection. At this stage it was considered that 3rd party mobile data network provides the most cost effective solution. Provision of 3rd party mobile data networks will be used as the basis of the order of cost estimate in section 7.

7 PAY ON FOOT SYSTEM

Taunton council owned car parks are all operated as Pay-and-Display (P&D). This necessitates users to purchase a ticket on arrival for the anticipated duration of their stay. This then creates a time limit for shopping etc. by when the user has to return to the car park. The advantage of P&D is that installed equipment is minimal. A disadvantage is the need for patrols to detect overstayed parking. Also P&D equipment does not itself count vehicles in and out of car parks, so to implement a Parking Guidance VMS system; additional counters would need to be installed in participating P&D car parks.

Pay-on-Foot (PoF) operation is based on users paying for time parked after the event. This removes pressure of a fixed deadline to return and exit the car park to avoid penalty. To administer PoF, tickets (or tokens) are dispensed on entry to record start time. At the end of the stay, the user inserts their ticket in a payment machine and pays for the time used. The ticket (or token) is updated with payment time and then used to pass through an exit barrier. By virtue of employing entry/exit barriers and inductive loops, vehicles can be counted in and out and car park occupancy (spaces) can be calculated by the PoF central system. This data can then be passed in near real-time to the SCC UTMC system and used to display numbers of spaces on Variable Message Signs (VMS).

7.1 CAR PARKS FOR POF OPERATION.

The following car parks have been suggested for conversion from P&D to PoF operation.

- Orchard (MSCP)
- High Street (MSCP).
- Tangier
- Canon Street
- Wood Street
- Castle Street
- Enfield

Two of the chosen car parks, High Street and Canon Street, have private car parks leading off the public car park, i.e. need to drive through the public car park to reach the separate private car park. Private parking users would need some means of checking in/out of the public car park without incurring payment for stay in the public car park. This could be achieved in three ways:

1. ANPR Option. Automatic Number Plate Recognition cameras at public car park entry/exit barriers and at private car park entry/exit barriers. Registered “private parking” vehicles (number plates) would be read and automatically verified by their number plates and allowed free passage.
2. RFID ticket Option. RFID smartcard readers at public car park entry/exit barriers and at private car park entry/exit barriers. Registered “private parking” users swiping their smart card would be automatically verified and allowed free passage.
3. RFID ticket Option. RFID smartcard readers at public car park entry/exit barriers only. Registered “private parking” users swiping their smart card would be automatically verified and allowed free passage, also excluded from public car park spaces counting. This option avoids additional cost of equipment (barriers, RFID card readers or ANPR cameras and count loops) at entry/exit to the Private Car Park.

For the purpose of this PoF proposal and budgetary costing, Option 3 listed above is chosen as the preferred option for treatment of private parking off High Street and Canon Street public car parks. The use RFID pass cards rather than ANPR cameras at entry and exit barriers is preferred as it is feared that vehicle recognition by ANPR may take more time than needed to swipe and verify a RFID access card and potentially cause access lane congestion at peak times. Also it is expected that ANPR cameras would present higher recurring costs of cleaning and maintenance.

7.2 CORE POF SYSTEM

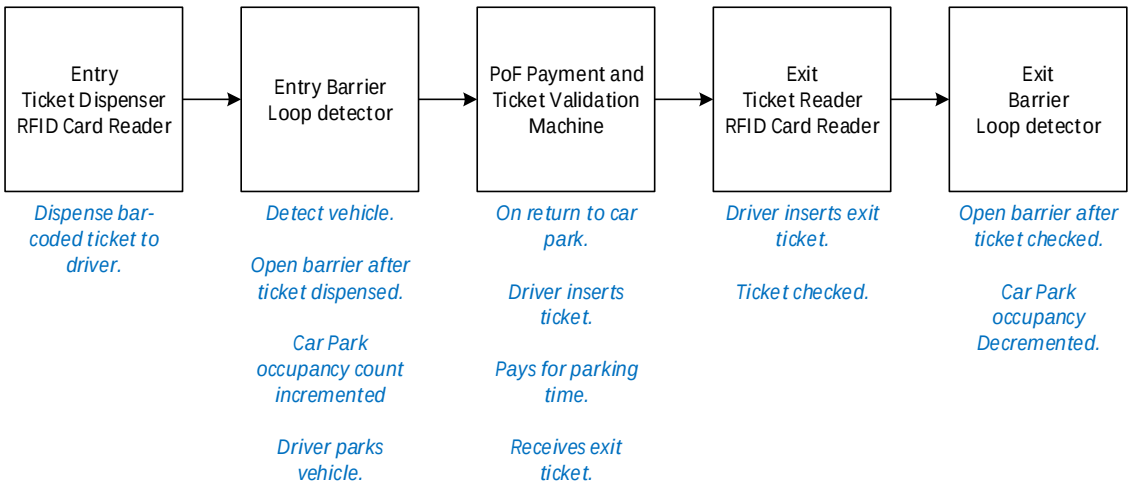
The PoF system will have the following core components:

- Entry ticket dispenser
- Entry Barrier
- Exit ticket reader
- Exit barrier
- Payment machine

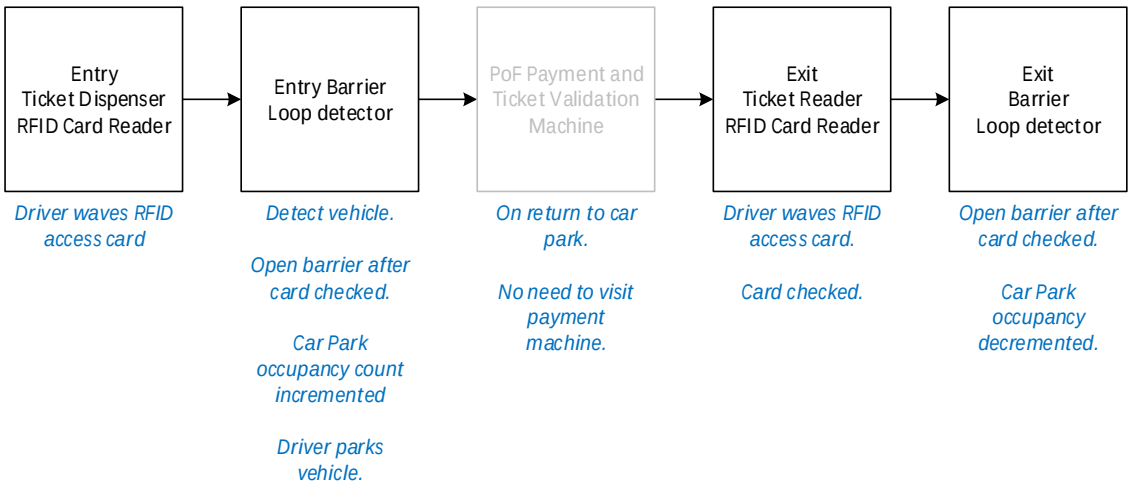
In addition, there would be a central system instation located in the council car park office. This would include

- Central server
- Communications equipment. (including interface to SCC UTMC system).
- Operator terminal (GUI)
- Operator microphone console

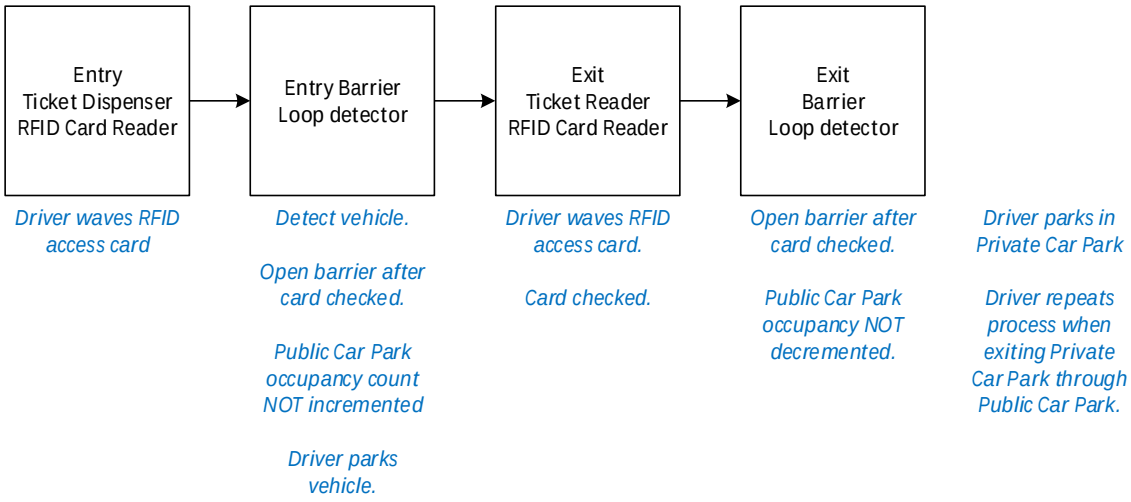
7.3 POF PROCESS FOR PUBLIC ACCESS TO PUBLIC CAR PARK.



7.4 POF PROCESS FOR CARD-HOLDER ACCESS TO PUBLIC CAR PARK.



7.5 POF PROCESS FOR CARD-HOLDER ACCESS TO PRIVATE CAR PARK THROUGH PUBLIC CAR PARK (HIGH STREET AND CANON STREET CAR PARKS)



The above scenarios assume use of RFID access swipe cards used by registered users to access or pass through public car parks. Additional checking by the parking management system will ensure registered Private Parking pass holders are provided access and egress through the public car park without need to pay. It is expected that existing enforcement of parking in the private car parks off the public car parks will be sufficient and avoid the need for extra equipment to meter registered vehicles/drivers in and out of these private car parks at the expense of the Council. This arrangement could result in holders of private parking access cards parking in the public car park rather than the private car park. This should not occur if private parking pass cards are limited to the number of private parking spaces.

7.6 ENTRY BARRIER AND TICKET DISPENSER

Figure 12, Exit barrier and ticket dispenser

Each entry lane will be equipped with a Barrier and Ticket Dispenser machine. The Ticket Dispenser will print and issue a 18 digit barcode ticket (85x60mm ticket stock roll) on demand. It is expected that a ticket will be printed within 3seconds and therefore not create much delay or congestion at the car park entrance. The Ticket Dispenser will also read a RFID proximity pass card when presented to the machine. No ticket will be printed in response to RFID card acceptance. The Ticket Dispenser will incorporate a LCD display screen, pushbutton controls and an intercom facility for the driver to communicate and seek help and assistance from the car park office.

The Entry Barrier will incorporate inductive loop vehicle detection and other sensing to prevent barrier being lowered whilst vehicle is present. The barrier will be raised after ticket has been taken or after a valid RFID pass card has been read and verified as valid by the system.

7.7 EXIT TICKET READER AND BARRIER

Figure 13, Exit ticket reader and barrier

Each exit lane will be equipped with a Barrier and Ticket Reader machine. The Ticket Reader will accept a 18 digit barcode ticket from the driver that has been coded and output from a PoF Pay Station on completion of parking payment.

The Ticket Reader will also read a RFID proximity pass card when presented to the machine. The Ticket Reader will incorporate a LCD display screen, pushbutton controls and an intercom facility for the driver to communicate and seek help and assistance from the car park office. It is possible to include the option of Chip-and-PIN credit or debit card payment and receipt printing functions within the Exit Ticket Reader to allow payment on exit, although this may add some delay to vehicles exiting at peak times.

The Exit Barrier will incorporate inductive loop vehicle detection and other sensing to prevent barrier being lowered whilst vehicle is present. The barrier will be raised after a valid barcoded ticket or a valid RFID pass card has been recognised.

7.8 PAY STATION

The Pay station/s will be located on pedestrian entrance/exits to the car park. The user carries their entry ticket with them and inserts it into the Pay station on their return to the car park. The pay station notifies the payment to be made by cash or card. The pay station will incorporate Chip-and-PIN credit or debit card reader, banknote receptor, coins receptor and a receipt printer. The pay station will issue an exit ticket to the user on receipt of full payment.

Figure 14, Ticket Pay Machine

The pay station will incorporate a LCD display screen, pushbutton controls and an intercom facility for the user to communicate and seek help and assistance from the car park office where necessary.

7.9 CENTRAL SYSTEM.

The central system will be located in the car par manager's office. Access to the system alerts, functions and reports will be via a Graphical User Interface (GUI) user terminal. As a payment management system, it shall be secure in operation and resistant to fraud or abuse.

Figure 15, PoF central system user interface

The user terminal function should be standard web browser (e.g. Chrome, Firefox, IE) based and include as standard:

- Equipment Status indications.
- Event alarms or operator alert's.
- Car Park occupancy data.
- Controls for intercom and video playing on machine screens.
- Functions to adjust system parameters and tariff bands, time periods etc.
- Provide range of Operational and Financial Reports (output CSV or Excel)

The system shall cope with lost ticket scenarios and arrive at the correct price based on information provided regarding entry time etc.

8 ORDER OF COST ESTIMATE

8.1 CAR PARK GUIDANCE COST ESTIMATE

The order of cost estimate has been prepared to indicate the budgetary estimate for the Taunton Car Park Guidance VMS system as defined in Table 4 below.

Item	Description	Qty	Unit	Sub-Total	TOTAL
1	Car Park Counters				£47,363
1.1	Loops & slot cutting	9	£1,000	£9,000	
1.2	Counter Modules	10	£2,400	£24,000	
1.3	Wireless Routers	9	£950	£8,550	
1.4	Cabinet & PDU	8	£500	£4,000	
1.5	Airtime (24months)	9	£192	£1,728	
1.6	Delivery	1	£85	£85	
2	UTMC System				£14,000
2.1	VMS adapter	1	£7,000	£7,000	
2.2	Counter adapter	1	£7,000	£7,000	
3	Signs			£263,000	£278,920
3.1	Airtime (24months)	10	£192	£1,920	
3.2	Terminal			£8,000	
3.3	FAT			£500	
3.4	Docs			£500	
3.5	Training			£1,000	
3.6	Supplier PM			£4,000	
4	Traffic Management				£31,000
5	Civils (power supplies)				£45,000
6	Design/PM Consultancy				£70,000
Total order of cost estimate					£486,283

Table 5, Order of cost estimate for Taunton Car Park Guidance VMS system

Assumptions

Item 1, covers the provision of car park counter sites, including slot cutting and inductive loop installation, provision of equipment cubicle and associated equipment to operate the loop counter site for 24 months. This cost estimate assumes that the existing cabinet, foundations and cabling infrastructure has been made good at Orchard and High Street car parks.

Item 2, covers the configuration and modification of the SCC UTMC system to communicate and accept data from car park counter sites and control car park guidance VMS.

Item 3, covers delivery of 10 x VMS signs as identified in this study, including foundations and mounting infrastructure, documentation, system testing, commissioning and training. For the

purpose of this estimate it was assumed that each site would be located on flat ground with good soil structural properties (without rock) and would not require provision of retaining walls, safety barriers, fences or paving.
Item 4, cover the setting and removal of traffic management for a single lane, for a two-day period for each VMS site. For the purposes of the estimate it was assumed that traffic management will be provided for a two-day period for each car park counter site identified in the study.

Item 5, covers trenching, ducting, laying of power cable, backfill, provision of electrical termination and commissioning. It has been assumed that a viable electrical supply is within close vicinity of each site. This cost estimate does not include the provision of electricity interfaces or cross carriageway ducting or reinstatement of curbs or pavements.

Item 6, covers preparation of the design, including written specifications, system overview drawings, general site layout drawings, sign, mounting structure and foundation drawings. Preparation of procurement document package, including bill of quantities, specification and drawings.

Item 6, includes managing a supplier to design, construct, test, integrate into a operational system. This includes liaison and co-ordination with TDBC and SCC and its supply chains to deliver the work.

8.2 POF TICKETING COST ESTIMATE

Car Park Equipment		Baseline	Options	
1	Tangier Car Park Entry Terminal + Barrier x1 Exit Terminal + Barrier x1 pay station x2 Wi-Fi communications *Supplier recommended Options*	£59,593.00	*£1,556.00*	
2	Orchard Car Park Entry Terminal + Barrier x2 Exit Terminal + Barrier x3 pay station 3+1+1=5 Wi-Fi communications *Supplier recommended Options*	£113,361.00	*£4,653.00*	
3	High Street Car Park Entry Terminal + Barrier x1 Exit Terminal + Barrier x2 pay station x4 Wi-Fi communications *Supplier recommended Options*	£84,818.00	*£2,477.00*	
4	Wood Street Car Park Entry Terminal + Barrier x1 Exit Terminal + Barrier x1 pay station x2 Wi-Fi communications *Supplier recommended Options*	£57,976.00	*£1,556.00*	
5	Castle Street Car Park Entry Terminal + Barrier x1 Exit Terminal + Barrier x1 pay station x2 Wi-Fi communications *Supplier recommended Options*	£59,593.00	*£1,556.00*	
6	Enfield Car Park Entry Terminal + Barrier x1 Exit Terminal + Barrier x1 pay station x2 Wi-Fi communications *Supplier recommended Options*	£59,593.00	*£1,556.00*	
7	Canon Street Car Park Entry Terminal + Barrier x1 Exit Terminal + Barrier x1 pay station x2 Wi-Fi communications *Supplier recommended Options*	£55,624.00	*£1,556.00*	

Control Room				
1	Servers and software x2 Operator PC Intercom UPS ADSL Router Proximity Card Reader / Programmer *Supplier recommended Options*	£35,369.00		
Design and Consultancy		£30,000.00		
TOTAL ex VAT		**£555,927.00**	**£14,910.00**	**£570,837.00**

Table 6, Order of cost estimate for Taunton Pay on Foot car ticket system

Assumptions

1. Provision of council Wi-Fi network coverage at car parks for car park management outstation-in station communications back to Control Room at Council Offices.
2. Provision of ADSL line at Council car parking office (Control Room)
3. Power supply at car parks and Control Room.
4. Realignment of Tangier Car Park entrance/exit to allow for entry ticket dispenser, exit ticket reader and entry/exit rising barriers.
5. Block off direct access to Canon Street private car park with bollards. Private car park access restricted only via public car park entrance and barriers to be located further up entry road.

9 IMPLEMENTATION PROGRAM

9.1 INDICATIVE PROGRAMME

The indicative programme in Figure 12, shows the path from Feasibility Study, Detail Design and Procurement and Implementation.

9.2 RISKS & ASSUMPTIONS

Item	Risk	Potential Mitigation
1.	→ Somerset UTMC system will require upgrade to add car park counting and VMS control adapters. Risk that this is work is not secured by SCC or not done or completed in time by their UTMC contractor.	→ Early involvement of SCC and their UTMC system provider (Cloud Amber) to gauge upgrade cost and timescale.
2.	→ Operation of some car parks to be changed from Pay-and-Display to Pay-on-Foot. Uncertainty regarding source of car park spaces data.	→ Change of operation to be planned and completed ahead of parking guidance system implementation.
3.	→ Preferred location of VMS ruled out due to STATS or third party imposed restrictions.	→ Early provision of STATS data.
4.	→ Firepool car park management system not determined in time for VMS system procurement.	→ Ensure UTMC compliant car park interface is included for Firepool car park by developer.
5.	→ Difficulty identifying source and routing of power supplies for Car Park counters and VMS sites.	→ Early determination equipment locations and power supply needs.
6.	→ Wireless communications for Counters and VMS disrupted by weak signal.	→ Ensure wireless survey is specified as part of implementation project. → Consider council Fibre and/or WiFi infrastructure for local network connections in detailed design.
7	→ HE process and approvals difficult to for VMS at M5 slip roads	→ Early engagement with HE or seek alternative VMS sites.

Assumptions

1. Start date for Detail Design / Procurement assumes Feasibility and Council decision for scheme to proceed.
2. Procurement assumes Central System will be Somerset UTMC and that this will be upgraded as necessary to input and process car-park counts from UTMC counters and Parking

Management Systems, also upgraded to output spaces and to control/monitor UTMC compliant VMS.

3. Sign manufacture is 12 weeks from factory order (i.e. finalised sign face detail design and size)
4. Excludes time for any planning permissions.
5. No STATS study or surveys have been undertaken at this stage to determine presence of underground services at proposed equipment locations.
6. Assumes power sources are available within practical distance to extend to sign and car park counter cabinet locations.
7. Assumes standard parking guidance system communications method, i.e. uses of mobile data SIM's for outstation to in station data communications.
8. It assumes that the PoF system can be carried out in parallel. Individual stages not shown in the programme.

ID	Task Name	Duration	Start
1	**Feasibility Study**	**65 days**	**Fri 01/01/16**
2	Feasibility Study Report	65 days?	Fri 01/01/16
3	Council decision to proceed	20 days	Thu 31/03/16
4	**Procurement**	**65 days?**	**Thu 28/04/16**
5	Agree scope and method of procurement	5 days	Thu 28/04/16
6	Prepare specification	20 days	Thu 05/05/16
7	Prepare BoQ	5 days	Thu 02/06/16
8	Prepare sign face designs	10 days	Thu 05/05/16
9	Prepare site location drawings	5 days	Thu 19/05/16
10	Agree final design	5 days	Thu 09/06/16
11	set up Tender	5 days	Thu 16/06/16
12	Tender advertised	20 days	Thu 23/06/16
13	Tender scoring	3 days	Thu 21/07/16
14	Tender adjuducation panel	1 day?	Tue 26/07/16
15	Notification of preferred suppplier	1 day?	Wed 27/07/16
16	**Implementation**	**120 days**	**Thu 28/07/16**
17	Project mobilisation and kickoff	5 days	Thu 28/07/16
18	Supplier surveys	5 days	Thu 04/08/16
19	Supplier Design and Design review	15 days	Thu 11/08/16
20	Manufacture lead time 12wks	60 days	Thu 01/09/16
21	Sign site preparation and civils	60 days	Thu 01/09/16
22	Review Test Documents	10 days	Thu 10/11/16
23	Signs FAT	5 days	Thu 24/11/16
24	Ship and install signs	15 days	Thu 01/12/16
25	Install car park loops and counters	20 days	Thu 01/09/16
26	Prepare UTMC central system	20 days	Thu 01/09/16
27	Review Test Documents	5 days	Thu 29/09/16
28	System SAT (UTMC,Counters)	5 days	Thu 06/10/16
29	System SAT (UTMC, Counters, Signs)	5 days	Thu 22/12/16
30	Snagging and handover	10 days	Thu 29/12/16

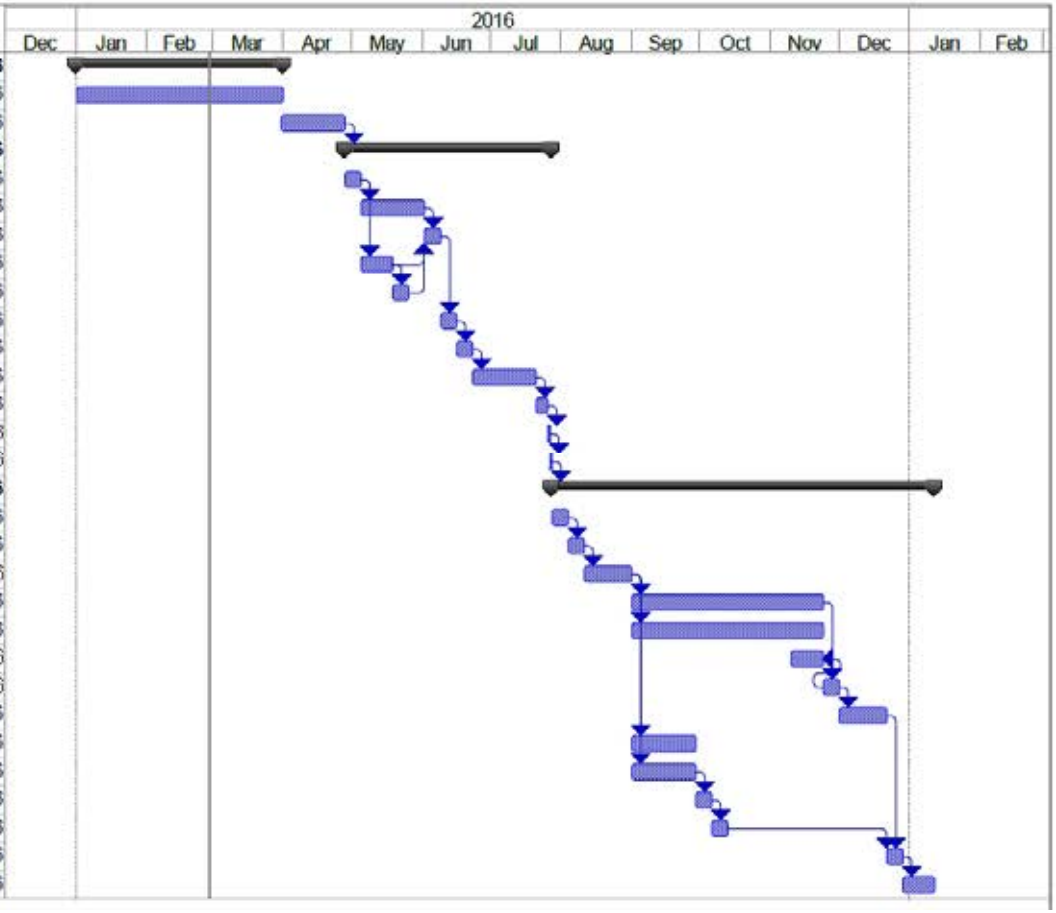


Figure 16, Indicative Delivery Programme

10 PRELIMINARY BUSINESS CASE

10.1 OVERVIEW

Taunton is the retail capital of Somerset with all the top names in shopping, eating and drinking, as well as a diverse mix of specialist and independent retailers.

With excellent transport connections, Taunton offers an attractive visitor and shopper destination.

It is recognised that the planned future development of Taunton will only serve to increase visitor numbers.

A key facet of a great visitor experience will be easy and stress free car parking. Improving car parking guidance by providing parking space availability information at key points will help visitors make **SMART parking choices** and reduce the amount of wasted time searching for alternative parking spots in the Town centre.

Searching for parking spaces may be responsible for as much as 30% of the traffic on main urban roads (Allen, 1993) and time spent searching for a parking place can often reach up to 40% of the total travel time (Axhausen, 1994).

The use of parking guidance (PGI) systems can assist drivers to improve network efficiency and accessibility by reducing time wasted searching or queuing at car park entrances. This in turn reduces congestion on the road network near the controlled car parks, benefiting other traffic (DfT, 2003). Non-quantifiable benefits include an improved public image of car park management, and reduction in driver frustration. Based on various studies (Gercans, 1984; Allen, 1993; Axhausen et al.,1994; Polak, et al.,1990; DfT,2003).

Studies suggest that the benefits of such systems can exceed the cost. A cost-benefit calculation made for Southampton City Council PGI suggested that the PGI signs were **economically viable** (with an economic rate of return of 91%) and over a five year period the benefits outweighed the cost of installation and maintenance (Converge-D3.3.1, 2000).

Parking guidance and management can improve network efficiency significantly, and environment and accessibility at some degree. Improved parking information from PGI systems can raise the public's image of the area, which can lead to improved revenue generation within that area. It can lead to safer driving behaviour, as drivers are guided straight to an available space (UTMC, 05a Final Report Page 47). The efficiency and accessibility benefits from reduced searching may be associated with some reductions in environmental intrusion and accidents, but these will depend on the local circumstances.

Parking guidance systems can lead to a **non-trivial reduction in the vehicle emissions** under extreme conditions of good guidance and drivers who do not know where there are likely to be vacant parking spaces.

The emissions reductions depend on the level of demand for public parking places in relation to the supply. As the difficulty of finding a place increases, measured by the unaided search time or distance, then the benefits increase. Typical benefits are 2% reductions in emissions of CO and HC and 1% in emissions of NOx and PM 10.

DfT Traffic Advisory Leaflet ITS 4/03 Parking Guidance and Information. [7]

Reported Benefits.

- *A survey in Southampton found that drivers reduced the time spent searching for a parking space on average by 50% from 2.2mins to 1.1mins*
- *A survey of over 600 people in Valencia, Spain found that 61% of people were influenced by the information on VMS signs and 30% had changed their parking destination as a result.*

Parking Guidance - Case Study: [8]
Intelligent parking guidance system, O R Tambo International Airport, South Africa.

Benefits:

- *Increased revenue.*
- *70% reduction in vehicle emissions.*
- *Greatly improved traveller satisfaction.*
- *Better utilisation and occupancy of the facility.*
- *Average time to find parking space cut from eight to 2.5 minutes.*

Additionally a number of the PGI signs will be configured to display traffic and incident information, producing the additional benefit of providing drivers information to avoid queues due to incidents, congestion and roadworks.

Another consideration could be the development of a **SMART app,** this could in the first instance provide parking guidance information to visitors and improve the overall effectiveness of the car park guidance system. However at this stage this option has not been included in the economic appraisal.

The study has identified a scheme concept including participating car parks, routes to car parks, and parking signage decision points for drivers and potential locations for electronic variable message signs (VMS). The scheme includes the following:

- Major town centre car parks [8] including new car park at Firepool development.
- Out of town, Park and Ride car parks [2].
- Variable Message Signs [10].

A further enhancement is the deployment of Pay on Foot (PoF) ticketing at the following car parks:

- Tangier,
- Castle Street,
- Enfield
- Wood Street
- Canon Street
- Orchard Street and High Street Car parks.

[7] (M Mcdonald and K Chatterjee, VMS in Urban Areas – Results of Cross Project Collaborative Study,TAP – Transport Sector CONVERGE D.3.3.1)

[8] (First published in ITS International September October 2009)

This approach **reduces visitors stress** related to the parking ticket running out and receiving a parking fine. Making visitors more relaxed, increasing the time of stay within the town. An **enjoyable day out in Taunton**, will increase the chances of visiting again. This can only have positive benefits for the retail and leisure business. The move to pay on foot operation would remove the need of enforcement patrols and should generate increased parking revenue.

Pay on Foot operation increased revenue over Pay and Display. [9]

- *"Due to increased compliance behind the barriers & an increased dwell time without the need for clock watching we typically expect to see an increase of circa 20% in parking revenues when switching from P&D."*

The combined capital acquisition and design costs for the PGI system and upgrading to PoF ticketing at Tangier, Castle Street, Enfield, Wood Street, Canon Street, Orchard Street and High Street Car parks was estimated at **£1,057,120.00**.

For the purposes of the business case, it has been estimated that the car parks identified in this study currently produce average annual ticket revenue of **£2,029,365.60**. Applying a conservative estimate of **15%** increase in ticket revenue by adopting pay on foot ticketing will yield an **additional £304,404.84 per year**.

Is has been estimated that the total annual revenue (benefit) would be **£2,333,770.44.** Note this assumes that the level of revenue remains consistent every month and is based on extrapolation of car park ticket revenue data from Dec 2014 and September 2015.

Table 7 - Estimated PoF annual ticket revenue

Car Park	Estimated annual ticket revenue	POF estimated annual ticket revenue
Canon Street	£554,950.80	£638,193.42
Castle Street	£57,114.90	£65,682.14
High Street	£358,014.00	£411,716.10
Orchard 1-3	£461,301.30	£530,496.50
Orchard 4 -5	£332,327.10	£382,176.17
Tangier	£133,008.30	£152,959.55
Wood Street	£105,831.60	£121,706.34
Enfield	£26,817.60	£30,840.24
Total estimated ticket revenue	£2,029,365.60	£2,333,770.44

[9] Taunton Car Parks. Proposal to WSP. Prepared by WPS UK Ltd. 23 March 2016

It was estimated that annual operational maintenance cost would be **£34,741.85** for the first year plus **£1,824.00** for mobile data services from year two both adjusted based on the Retail Price Index (RPI) throughout the 15 year system life cycle. For the purposes of the business case, the system replacement cost at the end of the system life cycle has been included. Note this has been adjusted based on the RPI index estimated for the 15 year period.

The benefits of the PGI system are difficult to qualify in particular for Taunton; however there is adequate evidence from other schemes that demonstrate the benefit in qualitative manner. For the purposes of the business case PGI benefits will not be quantified in monetary terms.

The annual benefit of the combined system is defined as the car parking ticket revenue estimate. A summary of the economic appraisal of the PGI and PoF system is summarised in Table 8 below:

Capital Acquisition Costs, including 15 year equipment renewal and design and project management.	£3,242,447.27
Estimated Benefits over 15 year period	£42,153,728.57
Benefit Cost Ratio (BCR)	13

Table 8 - PGI and PoF system economic appraisal summary

Table 9, presents the whole life cost worksheet for the PGI and PoF system with a more detailed assessment of the economic appraisal.

The BCR for the scheme is high; the study recommends that the PGI and PoF system funding approval be sought for scheme delivery in 2017/18.

It is anticipated that such a scheme could be designed, procured and installed within a programme timescale of approximately nine [9] months to twelve [12] months.

Whole Life Cost Worksheet

Discount Rate (%)-->	**3.5%**		*Project Life (years)*	**14**		*Tax Provision (%)-->*	**0%**									
£29,992,760	**<--Net Present Value**			**229.95%**	**<--Internal Rate Of Return**											
Capital Costs:	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Capital Acquisition Costs	£1,057,120														
Costs:															
Operational and maintenance costs		£34,741.85	£42,836.75	£43,970.43	£44,774.88	£45,579.33	£46,383.78	£47,188.23	£47,992.68	£48,797.13	£49,601.58	£50,406.02	£51,210.47	£52,014.92	£52,819.37
Equipment replacement costs (15 yrs)															£1,527,009.84
Savings:															
Annual Benefits (use positive #s)		£2,333,770.44	£2,755,016.00	£2,806,358.95	£2,857,701.90	£2,909,044.85	£2,960,387.80	£3,011,730.75	£3,063,073.70	£3,114,416.65	£3,165,759.60	£3,217,102.55	£3,268,445.50	£3,319,788.45	£3,371,131.40
NPV & IRR Calculations:	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Capital equipment	£1,057,120.00														
Costs	**£0.00**	**£34,741.85**	**£42,836.75**	**£43,970.43**	**£44,774.88**	**£45,579.33**	**£46,383.78**	**£47,188.23**	**£47,992.68**	**£48,797.13**	**£49,601.58**	**£50,406.02**	**£51,210.47**	**£52,014.92**	**£1,579,829.21**
Savings		**£2,333,770.44**	**£2,755,016.00**	**£2,806,358.95**	**£2,857,701.90**	**£2,909,044.85**	**£2,960,387.80**	**£3,011,730.75**	**£3,063,073.70**	**£3,114,416.65**	**£3,165,759.60**	**£3,217,102.55**	**£3,268,445.50**	**£3,319,788.45**	**£3,371,131.40**
Straight Line Depreciation		£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57
Profit Before Taxes	£0.00	£2,223,520.02	£2,636,670.68	£2,686,879.95	£2,737,418.45	£2,787,956.95	£2,838,495.45	£2,889,033.95	£2,939,572.45	£2,990,110.95	£3,040,649.45	£3,091,187.96	£3,141,726.46	£3,192,264.96	£1,715,793.62
Tax Provision @ 0% Of Profit Before Tax	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Net Income can be profit or loss	£0.00	£2,223,520.02	£2,636,670.68	£2,686,879.95	£2,737,418.45	£2,787,956.95	£2,838,495.45	£2,889,033.95	£2,939,572.45	£2,990,110.95	£3,040,649.45	£3,091,187.96	£3,141,726.46	£3,192,264.96	£1,715,793.62
Add Back Depreciation		£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57	£75,508.57
Cash Flow (Net Income + Depreciation)	-£1,057,120.00	£2,299,028.59	£2,712,179.25	£2,762,388.52	£2,812,927.02	£2,863,465.52	£2,914,004.02	£2,964,542.52	£3,015,081.02	£3,065,619.53	£3,116,158.03	£3,166,696.53	£3,217,235.03	£3,267,773.53	£1,791,302.19
Discount Factors @ 3.5%	£1.00	£0.97	£0.93	£0.90	£0.87	£0.84	£0.81	£0.79	£0.76	£0.73	£0.71	£0.68	£0.66	£0.64	£0.62
Present Value	-£1,057,120.00	£2,221,283.66	£2,531,848.35	£2,491,516.18	£2,451,303.39	£2,410,961.13	£2,370,544.15	£2,330,103.63	£2,289,687.37	£2,249,339.99	£2,209,103.05	£2,169,015.21	£2,129,112.41	£2,089,427.97	£1,106,633.87
Net Present Value	**£29,992,760**														
Internal Rate Return	**229.95%**	<--Requires at least one positive and one negative number in the present value row 32													
Year-->	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**

Costs	£3,242,447.27
Benefits	£42,153,728.57
15 year period BCR	**13.0005903**

Table 9 - Whole Life Cost Estimate for PGI and PoF ticketing scheme

11 NEXT STEPS

This Feasibility Study is intended to provide guidance to the council in terms of an initial technical design and budgetary cost of implementation of a parking guidance system serving Taunton.

The study has been extended in order to consider the viability of converting some of the larger shopper's car parks from Pay-and-Display, to Pay-on-Foot operation. Whilst this is separate from the main consideration of a parking guidance system, it will impact on how car park counts of spaces are acquired by the system and the equipment needed at these car parks.

The following steps would be expected to run in sequence subject to the council agreeing to implement this system.

11.1 DETAIL DESIGN

A detailed technical design specification will need to be written to convey all aspects of the parking guidance system functionality. The detail design will include final sign face design drawings for manufacture and/or site specific sign software configuration.

The detail design specification and drawings will be used as part of the tender documentation set for the parking guidance system procurement stage.

11.2 PROCUREMENT

It is expected that the parking guidance system will be procured as a single supply and installation contract, together with a period of warranty maintenance service. i.e. to include the counters, VMS, communications equipment, software, documentation and training.

Separate from the parking guidance system is the need to update the Somerset County Council UTMC system, to enable this to act as the central control system for Taunton parking guidance. i.e. to collect data from counters and parking management systems and output data to VMS. This may involve a separate procurement exercise by the council but is essential as prerequisite to operation of the parking guidance system

Tenders shall be sought from qualified system and equipment manufacturers and suppliers that exhibit good evidence of UTMC systems design, implementation and maintenance support.

Tenders will be adjudicated both technically and financially to determine a preferred system supplier.

If conversion of the seven proposed TDDC car parks to pay-on-foot operation is approved, this needs to precede the implementation of the SCC parking guidance system. Car park spaces data feed from the PoF system would then be used by the parking guidance system instead of need to install separate in/out counter equipment in those three car parks for that purpose.

11.3 IMPLEMENTATION

System implementation will involve the system supplier and the council (and/or the council's representatives) and additional resources need to be planned to be available at this project stage to ensure information is exchanged and the project is managed effectively.

At the start of the implementation stage, the supplier will write a Final System Design document to describe how their system and equipment fulfils the individual requirements of the tender specification. This shall be agreed prior to manufacture, unless the supplier proceeds at their own risk.

After equipment manufacture and software development/configuration is completed, a Factory Acceptance Test (FAT) will be undertaken to prove individual sub-systems and system as a whole fulfils the specified requirements before items are shipped to site for installation. It is expected that outdoor equipment will be soak tested to uncover any premature component failure.

Site installation will involve both parties to ensure work is sequenced carried out safely and to minimise impact on residents and the travelling public. Individual items of equipment will be commissioned and tested after installation.

Once all or most of the equipment is installed and commissioned as a complete working system, a Site Acceptance Test (SAT) will be performed using real data and all parts of the system. The system may then be handed over to operation and maintenance subject to a period of satisfactory operation forming part of SAT.

FINANCIAL APPRAISAL - INSTALLATION OF VMS AND POF

Yr:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTALS
	Capital	2016.17	2017.18	2018.19	2019.2	2020.21	2021.22	2022.23	2023.24	2024.25	2025.26	2026.27	2027.28	2028.29	2029.3	2030.31	
CASHFLOW																	
Net change in Asset Rental Income	1,200,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Principal - £1200k Borrowing over 15 yrs	15	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	1,200,000
Interest		23,954	22,330	20,706	19,082	17,458	15,834	14,210	12,586	10,962	9,338	7,714	6,090	4,466	2,842		187,572
Net Cash Flow		103,954	102,330	100,706	99,082	97,458	95,834	94,210	92,586	90,962	89,338	87,714	86,090	84,466	82,842	80,000	1,387,572
NPV discount factor		3.5%															
NPV of net cash flows for 15 yrs		£1,077,582															
CAPEX & FINANCING																	
Capital Expenditure	1,200,000																
Funding:																	
Capital Receipts	0																
Capital Grants / contributions	0																
Revenue Contribution	0																
S106	0																
Other Cash Resources	0																
Subtotal	0																
Borrowing Requirement	1,200,000																
Total Funding	1,200,000																
Reducing Debt Balance B/F	1,200,000	1,200,000	1,120,000	1,040,000	960,000	880,000	800,000	720,000	640,000	560,000	480,000	400,000	320,000	240,000	160,000	80,000	
MRP		80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	
Reducing Debt Balance C/F		1,120,000	1,040,000	960,000	880,000	800,000	720,000	640,000	560,000	480,000	400,000	320,000	240,000	160,000	80,000	0	
Interest Costs (EIP)	2.03%	23,954	22,330	20,706	19,082	17,458	15,834	14,210	12,586	10,962	9,338	7,714	6,090	4,466	2,842		
BUDGET IMPACT - AFFORDABILITY																	
Service - Asset Rental		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MRP - Asset Depreciation Method		80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	
Interest on borrowing		23,954	22,330	20,706	19,082	17,458	15,834	14,210	12,586	10,962	9,338	7,714	6,090	4,466	2,842		
Net Revenue Impact		103,954	102,330	100,706	99,082	97,458	95,834	94,210	92,586	90,962	89,338	87,714	86,090	84,466	82,842	80,000	

PWLB loan repayment profiles

Principal	£ 1,200,000		
Years	10		
	EIP Coupon Rate	Annuity Coupon Rate	Maturity Coupon Rate
PWLB Notice Number	187/16	187/16	187/16
Date	17-May-16	17-May-16	17-May-16
	1.66%	1.67%	2.30%

	EIP (EQUAL INSTALMENTS OF PRINCIPAL)			ANNUITY				MATURITY			MRP	
Year	Interest paid	Principal repaid	EIP Principal outstanding	Amount paid	of which interest	of which principal	Annuity Principal outstanding	Interest paid	Principal repaid	Maturity Principal outstanding	EIP	ANNUITY
	£	£	£	£	£	£	£	£	£	£	£	£
0			1,200,000				1,200,000			1,200,000		
0.5	9,960	60,000	1,140,000	65,399	10,020	55,379	1,144,621	13,800	-	1,200,000	60,000	55,379
1	9,462	60,000	1,080,000	65,399	9,558	55,841	1,088,780	13,800	-	1,200,000	60,000	55,841
1.5	8,964	60,000	1,020,000	65,399	9,091	56,308	1,032,472	13,800	-	1,200,000	60,000	56,308
2	8,466	60,000	960,000	65,399	8,621	56,778	975,694	13,800	-	1,200,000	60,000	56,778
2.5	7,968	60,000	900,000	65,399	8,147	57,252	918,442	13,800	-	1,200,000	60,000	57,252
3	7,470	60,000	840,000	65,399	7,669	57,730	860,712	13,800	-	1,200,000	60,000	57,730
3.5	6,972	60,000	780,000	65,399	7,187	58,212	802,500	13,800	-	1,200,000	60,000	58,212
4	6,474	60,000	720,000	65,399	6,701	58,698	743,802	13,800	-	1,200,000	60,000	58,698
4.5	5,976	60,000	660,000	65,399	6,211	59,188	684,614	13,800	-	1,200,000	60,000	59,188
5	5,478	60,000	600,000	65,399	5,717	59,682	624,932	13,800	-	1,200,000	60,000	59,682
5.5	4,980	60,000	540,000	65,399	5,218	60,181	564,751	13,800	-	1,200,000	60,000	60,181
6	4,482	60,000	480,000	65,399	4,716	60,683	504,068	13,800	-	1,200,000	60,000	60,683
6.5	3,984	60,000	420,000	65,399	4,209	61,190	442,878	13,800	-	1,200,000	60,000	61,190
7	3,486	60,000	360,000	65,399	3,698	61,701	381,177	13,800	-	1,200,000	60,000	61,701
7.5	2,988	60,000	300,000	65,399	3,183	62,216	318,961	13,800	-	1,200,000	60,000	62,216
8	2,490	60,000	240,000	65,399	2,663	62,736	256,225	13,800	-	1,200,000	60,000	62,736
8.5	1,992	60,000	180,000	65,399	2,139	63,259	192,965	13,800	-	1,200,000	60,000	63,259
9	1,494	60,000	120,000	65,399	1,611	63,788	129,178	13,800	-	1,200,000	60,000	63,788
9.5	996	60,000	60,000	65,399	1,079	64,320	64,857	13,800	-	1,200,000	60,000	64,320
10	498	60,000	-	65,399	542	64,857	- 0	13,800	1,200,000	-	60,000	64,857
	104,580	**1,200,000**		**1,307,979**	**107,979**	**1,200,000**		**276,000**	**1,200,000**		**1,200,000**	**1,200,000**
	Total Paid	**1,304,580**			**Total Paid**	**1,307,979**		**Total Paid**	**1,476,000**			

PWLB loan repayment profiles

Principal	£ 1,200,000
Years	15

	EIP Coupon Rate	Annuity Coupon Rate	Maturity Coupon Rate
PWLB Notice Number	187/16	187/16	187/16
Date	17-May-16	17-May-16	17-May-16
	2.03%	2.06%	2.76%

	EIP (EQUAL INSTALMENTS OF PRINCIPAL)			ANNUITY				MATURITY			MRP	
Year	Interest paid	Principal repaid	EIP Principal outstanding	Amount paid	of which interest	of which principal	Annuity Principal outstanding	Interest paid	Principal repaid	Maturity Principal outstanding	EIP	ANNUITY
	£	£	£	£	£	£	£	£	£	£	£	£
0			1,200,000				1,200,000			1,200,000		
0.5	12,180	40,000	1,160,000	46,702	12,360	34,342	1,165,658	16,560	-	1,200,000	40,000	34,342
1	11,774	40,000	1,120,000	46,702	12,006	34,696	1,130,963	16,560	-	1,200,000	40,000	34,696
1.5	11,368	40,000	1,080,000	46,702	11,649	35,053	1,095,910	16,560	-	1,200,000	40,000	35,053
2	10,962	40,000	1,040,000	46,702	11,288	35,414	1,060,496	16,560	-	1,200,000	40,000	35,414
2.5	10,556	40,000	1,000,000	46,702	10,923	35,779	1,024,717	16,560	-	1,200,000	40,000	35,779
3	10,150	40,000	960,000	46,702	10,555	36,147	988,570	16,560	-	1,200,000	40,000	36,147
3.5	9,744	40,000	920,000	46,702	10,182	36,520	952,050	16,560	-	1,200,000	40,000	36,520
4	9,338	40,000	880,000	46,702	9,806	36,896	915,155	16,560	-	1,200,000	40,000	36,896
4.5	8,932	40,000	840,000	46,702	9,426	37,276	877,879	16,560	-	1,200,000	40,000	37,276
5	8,526	40,000	800,000	46,702	9,042	37,660	840,219	16,560	-	1,200,000	40,000	37,660
5.5	8,120	40,000	760,000	46,702	8,654	38,048	802,172	16,560	-	1,200,000	40,000	38,048
6	7,714	40,000	720,000	46,702	8,262	38,439	763,733	16,560	-	1,200,000	40,000	38,439
6.5	7,308	40,000	680,000	46,702	7,866	38,835	724,897	16,560	-	1,200,000	40,000	38,835
7	6,902	40,000	640,000	46,702	7,466	39,235	685,662	16,560	-	1,200,000	40,000	39,235
7.5	6,496	40,000	600,000	46,702	7,062	39,639	646,022	16,560	-	1,200,000	40,000	39,639
8	6,090	40,000	560,000	46,702	6,654	40,048	605,975	16,560	-	1,200,000	40,000	40,048
8.5	5,684	40,000	520,000	46,702	6,242	40,460	565,514	16,560	-	1,200,000	40,000	40,460
9	5,278	40,000	480,000	46,702	5,825	40,877	524,637	16,560	-	1,200,000	40,000	40,877
9.5	4,872	40,000	440,000	46,702	5,404	41,298	483,339	16,560	-	1,200,000	40,000	41,298
10	4,466	40,000	400,000	46,702	4,978	41,723	441,616	16,560	-	1,200,000	40,000	41,723
10.5	4,060	40,000	360,000	46,702	4,549	42,153	399,463	16,560	-	1,200,000	40,000	42,153
11	3,654	40,000	320,000	46,702	4,114	42,587	356,875	16,560	-	1,200,000	40,000	42,587
11.5	3,248	40,000	280,000	46,702	3,676	43,026	313,849	16,560	-	1,200,000	40,000	43,026
12	2,842	40,000	240,000	46,702	3,233	43,469	270,380	16,560	-	1,200,000	40,000	43,469
12.5	2,436	40,000	200,000	46,702	2,785	43,917	226,463	16,560	-	1,200,000	40,000	43,917
13	2,030	40,000	160,000	46,702	2,333	44,369	182,094	16,560	-	1,200,000	40,000	44,369
13.5	1,624	40,000	120,000	46,702	1,876	44,826	137,268	16,560	-	1,200,000	40,000	44,826
14	1,218	40,000	80,000	46,702	1,414	45,288	91,980	16,560	-	1,200,000	40,000	45,288
14.5	812	40,000	40,000	46,702	947	45,754	46,226	16,560	-	1,200,000	40,000	45,754
15	406	40,000	-	46,702	476	46,226	- 0	16,560	1,200,000	-	40,000	46,226
	188,790	**1,200,000**		**1,401,054**	**201,054**	**1,200,000**		**496,800**	**1,200,000**		**1,200,000**	**1,200,000**
	Total Paid	**1,388,790**			**Total Paid**	**1,401,054**		**Total Paid**	**1,696,800**			

PWLB loan repayment profiles

Principal	£ 1,200,000		
Years	25		
	EIP Coupon Rate	Annuity Coupon Rate	Maturity Coupon Rate
PWLB Notice Number	187/16	187/16	187/16
Date	17-May-16	17-May-16	17-May-16
	2.58%	2.66%	3.11%

	EIP (EQUAL INSTALMENTS OF PRINCIPAL)			ANNUITY				MATURITY			MRP	
Year	Interest paid	Principal repaid	EIP Principal outstanding	Amount paid	of which interest	of which principal	Annuity Principal outstanding	Interest paid	Principal repaid	Maturity Principal outstanding	EIP	ANNUITY
	£	£	£	£	£	£	£	£	£	£	£	£
0			1,200,000				1,200,000			1,200,000		
0.5	15,480	24,000	1,176,000	33,012	15,960	17,052	1,182,948	18,660	-	1,200,000	24,000	17,052
1	15,170	24,000	1,152,000	33,012	15,733	17,278	1,165,670	18,660	-	1,200,000	24,000	17,278
1.5	14,861	24,000	1,128,000	33,012	15,503	17,508	1,148,162	18,660	-	1,200,000	24,000	17,508
2	14,551	24,000	1,104,000	33,012	15,271	17,741	1,130,421	18,660	-	1,200,000	24,000	17,741
2.5	14,242	24,000	1,080,000	33,012	15,035	17,977	1,112,444	18,660	-	1,200,000	24,000	17,977
3	13,932	24,000	1,056,000	33,012	14,796	18,216	1,094,228	18,660	-	1,200,000	24,000	18,216
3.5	13,622	24,000	1,032,000	33,012	14,553	18,458	1,075,770	18,660	-	1,200,000	24,000	18,458
4	13,313	24,000	1,008,000	33,012	14,308	18,704	1,057,066	18,660	-	1,200,000	24,000	18,704
4.5	13,003	24,000	984,000	33,012	14,059	18,953	1,038,113	18,660	-	1,200,000	24,000	18,953
5	12,694	24,000	960,000	33,012	13,807	19,205	1,018,909	18,660	-	1,200,000	24,000	19,205
5.5	12,384	24,000	936,000	33,012	13,551	19,460	999,449	18,660	-	1,200,000	24,000	19,460
6	12,074	24,000	912,000	33,012	13,293	19,719	979,730	18,660	-	1,200,000	24,000	19,719
6.5	11,765	24,000	888,000	33,012	13,030	19,981	959,749	18,660	-	1,200,000	24,000	19,981
7	11,455	24,000	864,000	33,012	12,765	20,247	939,502	18,660	-	1,200,000	24,000	20,247
7.5	11,146	24,000	840,000	33,012	12,495	20,516	918,986	18,660	-	1,200,000	24,000	20,516
8	10,836	24,000	816,000	33,012	12,223	20,789	898,197	18,660	-	1,200,000	24,000	20,789
8.5	10,526	24,000	792,000	33,012	11,946	21,066	877,131	18,660	-	1,200,000	24,000	21,066
9	10,217	24,000	768,000	33,012	11,666	21,346	855,785	18,660	-	1,200,000	24,000	21,346
9.5	9,907	24,000	744,000	33,012	11,382	21,630	834,156	18,660	-	1,200,000	24,000	21,630
10	9,598	24,000	720,000	33,012	11,094	21,917	812,238	18,660	-	1,200,000	24,000	21,917
10.5	9,288	24,000	696,000	33,012	10,803	22,209	790,030	18,660	-	1,200,000	24,000	22,209
11	8,978	24,000	672,000	33,012	10,507	22,504	767,526	18,660	-	1,200,000	24,000	22,504
11.5	8,669	24,000	648,000	33,012	10,208	22,803	744,722	18,660	-	1,200,000	24,000	22,803
12	8,359	24,000	624,000	33,012	9,905	23,107	721,615	18,660	-	1,200,000	24,000	23,107
12.5	8,050	24,000	600,000	33,012	9,597	23,414	698,201	18,660	-	1,200,000	24,000	23,414
13	7,740	24,000	576,000	33,012	9,286	23,725	674,476	18,660	-	1,200,000	24,000	23,725
13.5	7,430	24,000	552,000	33,012	8,971	24,041	650,435	18,660	-	1,200,000	24,000	24,041
14	7,121	24,000	528,000	33,012	8,651	24,361	626,074	18,660	-	1,200,000	24,000	24,361
14.5	6,811	24,000	504,000	33,012	8,327	24,685	601,389	18,660	-	1,200,000	24,000	24,685
15	6,502	24,000	480,000	33,012	7,998	25,013	576,376	18,660	-	1,200,000	24,000	25,013
15.5	6,192	24,000	456,000	33,012	7,666	25,346	551,030	18,660	-	1,200,000	24,000	25,346
16	5,882	24,000	432,000	33,012	7,329	25,683	525,348	18,660	-	1,200,000	24,000	25,683
16.5	5,573	24,000	408,000	33,012	6,987	26,024	499,323	18,660	-	1,200,000	24,000	26,024
17	5,263	24,000	384,000	33,012	6,641	26,371	472,953	18,660	-	1,200,000	24,000	26,371
17.5	4,954	24,000	360,000	33,012	6,290	26,721	446,231	18,660	-	1,200,000	24,000	26,721
18	4,644	24,000	336,000	33,012	5,935	27,077	419,155	18,660	-	1,200,000	24,000	27,077
18.5	4,334	24,000	312,000	33,012	5,575	27,437	391,718	18,660	-	1,200,000	24,000	27,437
19	4,025	24,000	288,000	33,012	5,210	27,802	363,916	18,660	-	1,200,000	24,000	27,802
19.5	3,715	24,000	264,000	33,012	4,840	28,171	335,745	18,660	-	1,200,000	24,000	28,171
20	3,406	24,000	240,000	33,012	4,465	28,546	307,199	18,660	-	1,200,000	24,000	28,546
20.5	3,096	24,000	216,000	33,012	4,086	28,926	278,273	18,660	-	1,200,000	24,000	28,926
21	2,786	24,000	192,000	33,012	3,701	29,311	248,962	18,660	-	1,200,000	24,000	29,311
21.5	2,477	24,000	168,000	33,012	3,311	29,700	219,262	18,660	-	1,200,000	24,000	29,700
22	2,167	24,000	144,000	33,012	2,916	30,095	189,167	18,660	-	1,200,000	24,000	30,095
22.5	1,858	24,000	120,000	33,012	2,516	30,496	158,671	18,660	-	1,200,000	24,000	30,496
23	1,548	24,000	96,000	33,012	2,110	30,901	127,770	18,660	-	1,200,000	24,000	30,901
23.5	1,238	24,000	72,000	33,012	1,699	31,312	96,458	18,660	-	1,200,000	24,000	31,312
24	929	24,000	48,000	33,012	1,283	31,729	64,729	18,660	-	1,200,000	24,000	31,729
24.5	619	24,000	24,000	33,012	861	32,151	32,578	18,660	-	1,200,000	24,000	32,151
25	310	24,000	-	33,012	433	32,578	- 0	18,660	1,200,000	-	24,000	32,578
	394,740	1,200,000		1,650,577	450,577	1,200,000		933,000	1,200,000		1,200,000	1,200,000
	Total Paid	1,594,740			Total Paid	1,650,577		Total Paid	2,133,000			

Data Date: 17-May-2016 PWLB INTEREST RATE NOTICE NUMBER 187/16 FIXED RATES FOR TRANSACTIONS AGREED AFTER 09:15 ON 17 MAY 2016

Use arrows (above) to scroll through pages of report. To export the information from this report click on one of the buttons at the end of this page.

This report displays the current PWLB Standard Fixed Interest Rates. For a given loan type and term, the PWLB Certainty New Loan Rate is calculated by subtracting 0.20% (i.e. 20 basis points) from the comparable PWLB Standard New Loan Rate, and the PWLB Project New Loan Rate is calculated by subtracting 0.40% (i.e. 40 basis points) from the comparable PWLB Standard New Loan Rate. Certainty Rates and Project Rates only apply to new loans, not premature repayment of loans.

	Standard New Loan Rates						Premature Repayment Rates					
	EIP		Annuity		Maturity		EIP		Annuity		Maturity	
Period (years)	Rate	Change	Rate	Change	Rate	Change	Rate	Change	Rate	Change	Rate	Change
1 year	-		-		1.32	(+0.03)	-		-		0.20	(+0.03)
Over 1 not over 1½	-		-		1.35	(+0.03)	0.20	(+0.03)	0.20	(+0.03)	0.20	(+0.03)
Over 1½ not over 2	1.34	(+0.04)	1.34	(+0.04)	1.40	(+0.04)	0.20	(+0.03)	0.20	(+0.03)	0.23	(+0.03)
Over 2 not over 2½	1.35	(+0.03)	1.35	(+0.03)	1.46	(+0.05)	0.22	(+0.04)	0.22	(+0.04)	0.28	(+0.04)
Over 2½ not over 3	1.38	(+0.04)	1.38	(+0.04)	1.52	(+0.04)	0.23	(+0.03)	0.23	(+0.03)	0.34	(+0.05)
Over 3 not over 3½	1.40	(+0.04)	1.40	(+0.04)	1.59	(+0.05)	0.26	(+0.04)	0.26	(+0.04)	0.40	(+0.04)
Over 3½ not over 4	1.43	(+0.04)	1.43	(+0.04)	1.67	(+0.05)	0.28	(+0.04)	0.28	(+0.04)	0.47	(+0.05)
Over 4 not over 4½	1.46	(+0.05)	1.46	(+0.05)	1.74	(+0.05)	0.31	(+0.04)	0.31	(+0.04)	0.55	(+0.05)
Over 4½ not over 5	1.49	(+0.05)	1.49	(+0.04)	1.82	(+0.05)	0.34	(+0.05)	0.34	(+0.05)	0.62	(+0.05)
Over 5 not over 5½	1.52	(+0.04)	1.52	(+0.04)	1.90	(+0.06)	0.37	(+0.05)	0.37	(+0.04)	0.70	(+0.05)
Over 5½ not over 6	1.56	(+0.05)	1.56	(+0.05)	1.97	(+0.05)	0.40	(+0.04)	0.40	(+0.04)	0.78	(+0.06)
Over 6 not over 6½	1.59	(+0.05)	1.60	(+0.05)	2.05	(+0.06)	0.44	(+0.05)	0.44	(+0.05)	0.85	(+0.05)
Over 6½ not over 7	1.63	(+0.05)	1.63	(+0.05)	2.12	(+0.05)	0.47	(+0.05)	0.48	(+0.05)	0.93	(+0.06)
Over 7 not over 7½	1.67	(+0.05)	1.67	(+0.05)	2.19	(+0.05)	0.51	(+0.05)	0.51	(+0.05)	1.00	(+0.05)
Over 7½ not over 8	1.71	(+0.06)	1.71	(+0.05)	2.26	(+0.06)	0.55	(+0.05)	0.55	(+0.05)	1.07	(+0.05)
Over 8 not over 8½	1.74	(+0.05)	1.75	(+0.05)	2.32	(+0.05)	0.59	(+0.06)	0.59	(+0.05)	1.14	(+0.06)
Over 8½ not over 9	1.78	(+0.05)	1.79	(+0.05)	2.39	(+0.06)	0.62	(+0.05)	0.63	(+0.05)	1.20	(+0.05)
Over 9 not over 9½	1.82	(+0.05)	1.83	(+0.05)	2.45	(+0.06)	0.66	(+0.05)	0.67	(+0.05)	1.27	(+0.06)
Over 9½ not over 10	1.86	(+0.05)	1.87	(+0.05)	2.50	(+0.05)	0.70	(+0.05)	0.71	(+0.05)	1.33	(+0.06)
Over 10 not over 10½	1.90	(+0.06)	1.91	(+0.05)	2.56	(+0.06)	0.74	(+0.05)	0.75	(+0.05)	1.38	(+0.05)
Over 10½ not over 11	1.94	(+0.06)	1.95	(+0.05)	2.61	(+0.06)	0.78	(+0.06)	0.79	(+0.05)	1.44	(+0.06)
Over 11 not over 11½	1.97	(+0.05)	1.99	(+0.06)	2.66	(+0.05)	0.82	(+0.06)	0.83	(+0.05)	1.49	(+0.06)
Over 11½ not over 12	2.01	(+0.05)	2.03	(+0.06)	2.71	(+0.06)	0.85	(+0.05)	0.87	(+0.06)	1.54	(+0.05)
Over 12 not over 12½	2.05	(+0.06)	2.07	(+0.06)	2.75	(+0.05)	0.89	(+0.05)	0.91	(+0.06)	1.59	(+0.06)
Over 12½ not over 13	2.09	(+0.06)	2.11	(+0.06)	2.80	(+0.05)	0.93	(+0.06)	0.95	(+0.06)	1.63	(+0.05)
Over 13 not over 13½	2.12	(+0.05)	2.15	(+0.06)	2.84	(+0.05)	0.97	(+0.06)	0.99	(+0.06)	1.68	(+0.05)
Over 13½ not over 14	2.16	(+0.06)	2.18	(+0.05)	2.88	(+0.05)	1.00	(+0.05)	1.03	(+0.06)	1.72	(+0.05)
Over 14 not over 14½	2.19	(+0.05)	2.22	(+0.06)	2.92	(+0.05)	1.04	(+0.06)	1.06	(+0.05)	1.76	(+0.05)
Over 14½ not over 15	2.23	(+0.06)	2.26	(+0.06)	2.96	(+0.05)	1.07	(+0.05)	1.10	(+0.06)	1.80	(+0.05)
Over 15 not over 15½	2.26	(+0.06)	2.29	(+0.06)	2.99	(+0.05)	1.11	(+0.06)	1.14	(+0.06)	1.84	(+0.05)
Over 15½ not over 16	2.29	(+0.06)	2.33	(+0.06)	3.02	(+0.04)	1.14	(+0.06)	1.17	(+0.06)	1.87	(+0.05)
Over 16 not over 16½	2.32	(+0.05)	2.36	(+0.06)	3.06	(+0.05)	1.17	(+0.06)	1.21	(+0.06)	1.90	(+0.04)
Over 16½ not over 17	2.36	(+0.06)	2.40	(+0.06)	3.08	(+0.04)	1.20	(+0.05)	1.24	(+0.06)	1.94	(+0.05)
Over 17 not over 17½	2.39	(+0.06)	2.43	(+0.06)	3.11	(+0.04)	1.24	(+0.06)	1.28	(+0.06)	1.96	(+0.04)
Over 17½ not over 18	2.42	(+0.06)	2.46	(+0.06)	3.14	(+0.05)	1.27	(+0.06)	1.31	(+0.06)	1.99	(+0.04)
Over 18 not over 18½	2.45	(+0.06)	2.49	(+0.05)	3.16	(+0.04)	1.30	(+0.06)	1.34	(+0.06)	2.02	(+0.05)
Over 18½ not over 19	2.47	(+0.05)	2.53	(+0.06)	3.18	(+0.04)	1.33	(+0.06)	1.37	(+0.05)	2.04	(+0.04)
Over 19 not over 19½	2.50	(+0.05)	2.56	(+0.06)	3.20	(+0.04)	1.35	(+0.05)	1.41	(+0.06)	2.06	(+0.04)
Over 19½ not over 20	2.53	(+0.06)	2.59	(+0.06)	3.22	(+0.04)	1.38	(+0.05)	1.44	(+0.06)	2.08	(+0.04)
Over 20 not over 20½	2.56	(+0.06)	2.62	(+0.06)	3.23	(+0.04)	1.41	(+0.06)	1.47	(+0.06)	2.10	(+0.04)
Over 20½ not over 21	2.58	(+0.05)	2.64	(+0.05)	3.25	(+0.04)	1.44	(+0.06)	1.50	(+0.06)	2.11	(+0.04)
Over 21 not over 21½	2.61	(+0.06)	2.67	(+0.05)	3.26	(+0.04)	1.46	(+0.05)	1.52	(+0.05)	2.13	(+0.04)
Over 21½ not over 22	2.63	(+0.05)	2.70	(+0.05)	3.27	(+0.04)	1.49	(+0.06)	1.55	(+0.05)	2.14	(+0.04)
Over 22 not over 22½	2.66	(+0.05)	2.73	(+0.06)	3.28	(+0.04)	1.51	(+0.05)	1.58	(+0.05)	2.15	(+0.04)
Over 22½ not over 23	2.68	(+0.05)	2.76	(+0.06)	3.29	(+0.04)	1.54	(+0.05)	1.61	(+0.06)	2.16	(+0.04)
Over 23 not over 23½	2.71	(+0.06)	2.78	(+0.05)	3.30	(+0.04)	1.56	(+0.05)	1.64	(+0.06)	2.17	(+0.04)
Over 23½ not over 24	2.73	(+0.05)	2.81	(+0.06)	3.30	(+0.04)	1.59	(+0.06)	1.66	(+0.05)	2.18	(+0.04)
Over 24 not over 24½	2.75	(+0.05)	2.83	(+0.05)	3.31	(+0.04)	1.61	(+0.05)	1.69	(+0.06)	2.18	(+0.04)
Over 24½ not over 25	2.78	(+0.06)	2.86	(+0.06)	3.31	(+0.04)	1.63	(+0.05)	1.71	(+0.05)	2.19	(+0.04)
Over 25 not over 25½	2.80	(+0.05)	2.88	(+0.05)	3.31	(+0.04)	1.66	(+0.06)	1.74	(+0.06)	2.19	(+0.04)
Over 25½ not over 26	2.82	(+0.05)	2.91	(+0.06)	3.31	(+0.04)	1.68	(+0.05)	1.76	(+0.05)	2.19	(+0.04)
Over 26 not over 26½	2.84	(+0.05)	2.93	(+0.05)	3.31	(+0.04)	1.70	(+0.05)	1.79	(+0.06)	2.19	(+0.04)
Over 26½ not over 27	2.86	(+0.05)	2.95	(+0.05)	3.31	(+0.04)	1.72	(+0.05)	1.81	(+0.05)	2.19	(+0.04)
Over 27 not over 27½	2.88	(+0.05)	2.97	(+0.05)	3.31	(+0.04)	1.74	(+0.05)	1.83	(+0.05)	2.19	(+0.04)
Over 27½ not over 28	2.90	(+0.05)	2.99	(+0.05)	3.31	(+0.04)	1.76	(+0.05)	1.85	(+0.05)	2.18	(+0.04)
Over 28 not over 28½	2.92	(+0.05)	3.01	(+0.05)	3.30	(+0.04)	1.78	(+0.05)	1.87	(+0.05)	2.18	(+0.04)
Over 28½ not over 29	2.94	(+0.05)	3.03	(+0.05)	3.30	(+0.04)	1.80	(+0.05)	1.89	(+0.05)	2.18	(+0.04)
Over 29 not over 29½	2.96	(+0.05)	3.05	(+0.05)	3.30	(+0.04)	1.82	(+0.05)	1.91	(+0.05)	2.17	(+0.04)
Over 29½ not over 30	2.97	(+0.04)	3.07	(+0.05)	3.29	(+0.04)	1.84	(+0.05)	1.93	(+0.05)	2.16	(+0.04)
Over 30 not over 30½	2.99	(+0.05)	3.09	(+0.05)	3.28	(+0.04)	1.85	(+0.04)	1.95	(+0.05)	2.16	(+0.04)
Over 30½ not over 31	3.01	(+0.05)	3.11	(+0.05)	3.28	(+0.04)	1.87	(+0.05)	1.97	(+0.05)	2.15	(+0.04)
Over 31 not over 31½	3.02	(+0.04)	3.12	(+0.04)	3.27	(+0.04)	1.89	(+0.05)	1.99	(+0.05)	2.14	(+0.04)
Over 31½ not over 32	3.04	(+0.05)	3.14	(+0.05)	3.26	(+0.04)	1.90	(+0.04)	2.00	(+0.04)	2.14	(+0.05)
Over 32 not over 32½	3.06	(+0.05)	3.15	(+0.04)	3.26	(+0.05)	1.92	(+0.05)	2.02	(+0.05)	2.13	(+0.04)
Over 32½ not over 33	3.07	(+0.05)	3.17	(+0.05)	3.25	(+0.04)	1.94	(+0.05)	2.03	(+0.04)	2.12	(+0.04)
Over 33 not over 33½	3.08	(+0.04)	3.18	(+0.04)	3.24	(+0.04)	1.95	(+0.05)	2.05	(+0.05)	2.11	(+0.04)
Over 33½ not over 34	3.10	(+0.05)	3.19	(+0.04)	3.23	(+0.04)	1.96	(+0.04)	2.06	(+0.04)	2.10	(+0.04)
Over 34 not over 34½	3.11	(+0.04)	3.21	(+0.05)	3.22	(+0.04)	1.98	(+0.05)	2.07	(+0.04)	2.09	(+0.04)
Over 34½ not over 35	3.12	(+0.04)	3.22	(+0.05)	3.21	(+0.04)	1.99	(+0.04)	2.09	(+0.05)	2.09	(+0.05)
Over 35 not over 35½	3.14	(+0.05)	3.23	(+0.05)	3.21	(+0.05)	2.00	(+0.04)	2.10	(+0.05)	2.08	(+0.04)
Over 35½ not over 36	3.15	(+0.05)	3.24	(+0.05)	3.20	(+0.04)	2.02	(+0.05)	2.11	(+0.05)	2.07	(+0.04)
Over 36 not over 36½	3.16	(+0.04)	3.25	(+0.05)	3.19	(+0.04)	2.03	(+0.05)	2.12	(+0.05)	2.06	(+0.04)
Over 36½ not over 37	3.17	(+0.04)	3.26	(+0.05)	3.18	(+0.04)	2.04	(+0.04)	2.13	(+0.05)	2.05	(+0.04)
Over 37 not over 37½	3.18	(+0.04)	3.26	(+0.04)	3.17	(+0.04)	2.05	(+0.04)	2.14	(+0.05)	2.05	(+0.05)
Over 37½ not over 38	3.19	(+0.04)	3.27	(+0.04)	3.17	(+0.05)	2.06	(+0.04)	2.14	(+0.04)	2.04	(+0.04)
Over 38 not over 38½	3.20	(+0.04)	3.28	(+0.04)	3.16	(+0.04)	2.07	(+0.04)	2.15	(+0.04)	2.03	(+0.04)

Over 38½ not over 39	3.21	(+0.04)	3.28	(+0.04)	3.15	(+0.04)	2.08	(+0.04)	2.16	(+0.04)	2.03	(+0.05)
Over 39 not over 39½	3.22	(+0.04)	3.29	(+0.04)	3.15	(+0.05)	2.09	(+0.04)	2.16	(+0.04)	2.02	(+0.04)
Over 39½ not over 40	3.23	(+0.05)	3.29	(+0.04)	3.14	(+0.04)	2.10	(+0.04)	2.17	(+0.04)	2.01	(+0.04)
Over 40 not over 40½	3.23	(+0.04)	3.30	(+0.04)	3.13	(+0.04)	2.11	(+0.05)	2.17	(+0.04)	2.01	(+0.04)
Over 40½ not over 41	3.24	(+0.04)	3.30	(+0.04)	3.13	(+0.04)	2.11	(+0.04)	2.18	(+0.04)	2.00	(+0.04)
Over 41 not over 41½	3.25	(+0.04)	3.30	(+0.04)	3.12	(+0.04)	2.12	(+0.04)	2.18	(+0.04)	2.00	(+0.04)
Over 41½ not over 42	3.25	(+0.04)	3.31	(+0.04)	3.12	(+0.04)	2.13	(+0.04)	2.18	(+0.04)	2.00	(+0.05)
Over 42 not over 42½	3.26	(+0.04)	3.31	(+0.04)	3.12	(+0.05)	2.13	(+0.04)	2.19	(+0.04)	1.99	(+0.04)
Over 42½ not over 43	3.27	(+0.04)	3.31	(+0.04)	3.11	(+0.04)	2.14	(+0.04)	2.19	(+0.04)	1.99	(+0.05)
Over 43 not over 43½	3.27	(+0.04)	3.31	(+0.04)	3.11	(+0.05)	2.15	(+0.04)	2.19	(+0.04)	1.99	(+0.05)
Over 43½ not over 44	3.28	(+0.04)	3.31	(+0.04)	3.11	(+0.05)	2.15	(+0.04)	2.19	(+0.04)	1.98	(+0.04)
Over 44 not over 44½	3.28	(+0.04)	3.31	(+0.04)	3.10	(+0.04)	2.16	(+0.04)	2.19	(+0.04)	1.98	(+0.04)
Over 44½ not over 45	3.29	(+0.04)	3.31	(+0.04)	3.10	(+0.04)	2.16	(+0.04)	2.19	(+0.04)	1.98	(+0.04)
Over 45 not over 45½	3.29	(+0.04)	3.31	(+0.04)	3.10	(+0.04)	2.17	(+0.04)	2.19	(+0.04)	1.98	(+0.05)
Over 45½ not over 46	3.29	(+0.04)	3.31	(+0.04)	3.10	(+0.05)	2.17	(+0.04)	2.19	(+0.04)	1.98	(+0.05)
Over 46 not over 46½	3.30	(+0.04)	3.31	(+0.04)	3.10	(+0.05)	2.17	(+0.04)	2.19	(+0.04)	1.98	(+0.05)
Over 46½ not over 47	3.30	(+0.04)	3.31	(+0.04)	3.10	(+0.05)	2.18	(+0.04)	2.18	(+0.03)	1.98	(+0.05)
Over 47 not over 47½	3.30	(+0.04)	3.30	(+0.03)	3.10	(+0.05)	2.18	(+0.04)	2.18	(+0.04)	1.98	(+0.05)
Over 47½ not over 48	3.30	(+0.04)	3.30	(+0.04)	3.10	(+0.05)	2.18	(+0.04)	2.18	(+0.04)	1.98	(+0.05)
Over 48 not over 48½	3.31	(+0.04)	3.30	(+0.04)	3.10	(+0.04)	2.18	(+0.04)	2.18	(+0.04)	1.98	(+0.05)
Over 48½ not over 49	3.31	(+0.04)	3.30	(+0.04)	3.10	(+0.04)	2.19	(+0.04)	2.17	(+0.04)	1.98	(+0.04)
Over 49 not over 49½	3.31	(+0.04)	3.29	(+0.04)	3.10	(+0.04)	2.19	(+0.04)	2.17	(+0.04)	1.98	(+0.04)
Over 49½ not over 50	3.31	(+0.04)	3.29	(+0.04)	3.11	(+0.05)	2.19	(+0.04)	2.17	(+0.04)	1.98	(+0.04)
Rates determined for residual contractual obligations for p	New Loan Rates						Premature Repayment Rates					
	EIP		Annuity		Maturity		EIP		Annuity		Maturity	
Period (years)	Rate	Change	Rate	Change	Rate	Change	Rate	Change	Rate	Change	Rate	Change
	3.31	(+0.04)	3.29	(+0.04)	3.11	(+0.05)	2.19	(+0.04)	2.17	(+0.04)	1.99	(+0.05)