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Dorchester Park & Ride and Trunk Road Service Area

Feasibility Study Update

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1 Introduction

1.1 Background

The purpose of this report is to update a feasibility study into the provision of a Park & Ride facility for Dorchester that was undertaken by Buro Happold in September 2010¹. The 2010 study was commissioned by West Dorset District Council (WDDC) and Dorset County Council (DCC) and built on work previously undertaken by both authorities and Dorset Engineering Consultancy (DEC). Since completion of this report there have been a number of key changes that will now be considered:

- 2011 census data, including mode of travel to work information, has been collected and released;
- The concept of providing a park and ride facility in combination with a trunk road service area (TRSA) on the A35 has been proposed as a method of delivering park and ride spaces at lower cost to the public purse;
- Weymouth Park & Ride site opened in July 2011.

1.2 Census Data

The release of the 2011 census data, combined with 2001 detailed travel to work data provides the opportunity to validate some of the findings of the 2010 study. This work is described in Chapter 3.

1.3 Combined Park & Ride and Trunk Road Service Area

Buro Happold was commissioned by the Duchy of Cornwall (as landowner) and WDDC to investigate whether combining a Park & Ride site with an A35 TRSA on the same site could be delivered without compromising either of these issues or creating additional negative effects, when compared with developing two separate facilities. This report was issued in April 2013 and is discussed in Chapter 4.

1.4 Weymouth Park & Ride

The potential to re-start a direct bus service from Weymouth's 1,000 space Park & Ride facility to serve Dorchester is discussed in Chapter 5.

1.5 Structure of Report

The structure of this report is as follows:

- Chapter 2: sets out the key findings of the September 2010 report;
- Chapter 3: validates the results of the 2010 study using 2001 and 2011 census data;
- Chapter 4: sets out the key findings of the April 2013 report into the feasibility of combining a P&R facility with a TRSA;
- Chapter 5: summarises the option to operate P&R services from the existing Weymouth site to Dorchester.
- Chapter 6: includes a review of potential alternative sites adjacent to the A35;
- Chapter 6: outlines environmental considerations; and
- Chapter 7: provides conclusions and recommendations.

¹ Dorchester Park & Ride, Stage 1 Report, Feasibility Study, Buro Happold, September 2010.

2 Dorchester P&R Feasibility Study 2010: Key Findings

2.1 Background

The report built on work previously undertaken by Dorset County Council, West Dorset District Council and Dorset Engineering Consultancy. Twenty sites were assessed on their ability to provide a Park & Ride facility (transport and access appraisal only) as shown in Figure 4.2 of the 2010 Report.

2.2 Mode Choice Modelling

In order to determine the likely level of demand for P&R, some form of mode choice modelling is required. A logit probability model was considered for this assessment. Logit models convert total trips costs (time and money) into generalised cost minutes and include locally derived mode constants (from stated preference surveys). This enables a comparison between existing car-only and car plus P&R options to be made, resulting in an estimated probability that car drivers will use the new service. Similar studies of P&R elsewhere in the UK have indicated that logit models often predict that up to half of drivers who would find it cheaper to use a P&R service (based on generalised cost minutes) will choose to do so. Drivers who have a free parking space at their destination and those travelling on employers business are usually excluded from the total market for P&R.

The 2010 report rejected the logit model approach because the availability of public long stay parking in the centre of Dorchester will be severely constrained, such that availability and not price will be a key determining factor. It could be argued that long stay parking will decant to on-street areas in a do-nothing scenario, but it is likely that residents' parking will be expanded further so as to negate this trend. In fact, the future expansion of P&R capacity itself will have a direct effect on the level of commuter parking in uncontrolled residential areas.

In order to combat the identified problems associated with the logit model approach, the 2010 study considered the distance and time between the decision point and each site. This could be considered as a hybrid to a logit model, since distance and time are key factors in logit modelling.

2.3 Traffic Distribution

A fundamental factor in determining the likely success of a potential P&R site is how it relates to the existing pattern of travel and distribution of trips (i.e. from which direction do vehicles travel into Dorchester). The 2010 study used data obtained from the Dorchester Transport and Environmental Plan (DTEP) Saturn Model which underpins the predicted demand for town centre parking in 2017, as set out in the Dorchester Parking Strategy. The distribution of trips in the DTEP model has been based on roadside interview data supported by traffic counts and possibly other interview surveys. The results of this analysis are provided in Figure 2.1. In summary, the model indicates that 28% of car trips to Dorchester arrive from the east, 39% from the south, 4% from the west and 31% from the north. Whilst the model has been validated to the appropriate standards (using guidance contained in the Design Manual for Roads and Bridges published by the Department for Transport) it is possible to use journey to work census data to check the validity of this distribution. The results of this validation are presented in Chapter 3.

2.4 Decision Point Analysis

The decision point analysis identified 7 locations to determine distance and time costs of using P&R from radial approach corridors to each of the 20 sites under investigation. Both the distance and time cost calculations produced similar top-performing sites, primarily because journey time is a function of distance plus highway geometry and congestion. The results indicated that sites near the Stadium Roundabout score particularly well. It was also noted that sites S and R (adjacent to Monkeys Jump roundabout and subsequently combined to form site SR) ranked favourably in both distance and time assessments. Overall, the decision point analysis is considered to provide a robust approach to ascertaining the most favourable location for developing a P&R site.

2.5 Highway Corridor Geometry

The 2010 report included consideration of corridor geometry. This is important since a wider carriageway offers the ability to introduce bus priority measures either at the time of P&R development or at a later date. Bus priority is key in promoting P&R since it improves the relative journey time for P&R passengers, when compared to car drivers.

The A354 Weymouth Road (from the south) was considered to offer the greatest opportunity for bus priority. It was noted that important trees on the western side of Weymouth Avenue may limit the full potential scope for bus priority schemes, but queue relocation techniques (using advance traffic signals) may offer similar benefits.

The analysis identified 6 sites that were worthy of further consideration.

The six shortlisted sites were:

- L. Weymouth Road West 2;
- J. Weymouth Road East;
- M. Bypass North;
- K. Weymouth Road West 1;
- I. Cricket Ground; and
- S & R (combined to SR). Monkey's Jump roundabout

2.6 Summary of findings

The 2010 report concludes that sites in the vicinity of the Stadium Roundabout offer the greatest potential to capture the maximum number of trips to P&R. Site L was discounted due to the close proximity of the necessary access to the Stadium roundabout and the potential for right turning vehicles causing congestion back onto the roundabout.

Sites north of the stadium roundabout were discounted since they are likely to increase movements on the A35.

Two sites were recommended for further investigation:

- J. Weymouth Road East
- SR. Monkey's Jump

Both sites taken forward were the subject of a Stage 2 preliminary master planning exercise. The results of this work were published in *Dorchester Park & Ride, Stage 2 Report, Preferred Options Indicative Masterplan, Buro Happold, October 2010*.

3 Dorchester P&R Feasibility Study 2010: Validation

3.1 2001 & 2011 Census Data

Using 2001 and 2011 Census Data it is possible to validate the results of the base year modelling work that was undertaken as part of the 2010 P&R Feasibility Study.

Unfortunately, the full travel to work data from the 2011 census (origin, destination and travel mode for work trips) was not available at the time of writing this report and is not likely to be available until Autumn 2013. However, although the 2001 data is now aged, the quality of the information and extremely reliable sample size mean that it is still valuable for trip distribution purposes.

In order to place the 2001 data in context, a variety of checks were made to identify key changes over the 10 year period, 2001 to 2011. This was completed for both West Dorset and Weymouth & Portland Districts, which constitute over 50% of car commuter trips into Dorchester.

3.2 Population Change

Table 3.1 indicates that whilst Weymouth and Portland's population has remained fairly static between 2001 and 2011, the population of West Dorset grew by 4.6%. Over the same period, Dorchester's population has grown by 18%.

Area	2001 Census	2011 Census	% Change
Dorchester	16,171	19,060	+18%
West Dorset (inc. Dorchester)	92,360	96,596	+4.6%
Weymouth and Portland	63,648	63,373	-0.4%

Table 3—1 Population change 2001 – 2011 Census

3.3 Employment

Table 3.2 set out the total employment in West Dorset and Weymouth & Portland between 2001 and 2011. Employment in Dorchester (and West Dorset generally) has grown faster than population, which would suggest a greater reliance on in-commuting from other areas.

Area	2001 Census	2011 Census	% Change
Dorchester	11,250	13,488	+20%
West Dorset (inc. Dorchester)	38,900	44,400	+14%
Weymouth and Portland	27,400	29,000	+6%

Table 3—2 Employment change 2001 – 2011 Census

3.4 Car Ownership

Table 3.3 sets out the change in household car ownership in West Dorset and Weymouth and Portland between 2001 and 2011. The number households without a car or with one car have declined slightly, with a slight rise in 2 car owning households. 3 and 4+ car owning households have grown significantly over the 10 year periods, albeit from a low base.

Area	2001 Census	2011 Census	% Change
No car/van	20.5%	19.2%	-6%
1 car/van	47.7%	45.2%	-5%
2 cars/vans	25.4%	26.7%	+5%
3 cars/vans	4.8%	6.5%	+35%
4+ cars/vans	1.5%	2.3%	+50%

Table 3—3 Change in Car Ownership, West Dorset and Weymouth & Portland Districts combined; 2001 and 2011 Census.

3.5 Mode of Travel to Work

Figure 3.1 sets out the mode of travel to work for residents of West Dorset and Weymouth & Portland in 2001 and 2011. There has been a slight increase in commuting by motorcycle, train, bicycle, bus and car passenger, with a slight reduction in walking and driving to work.

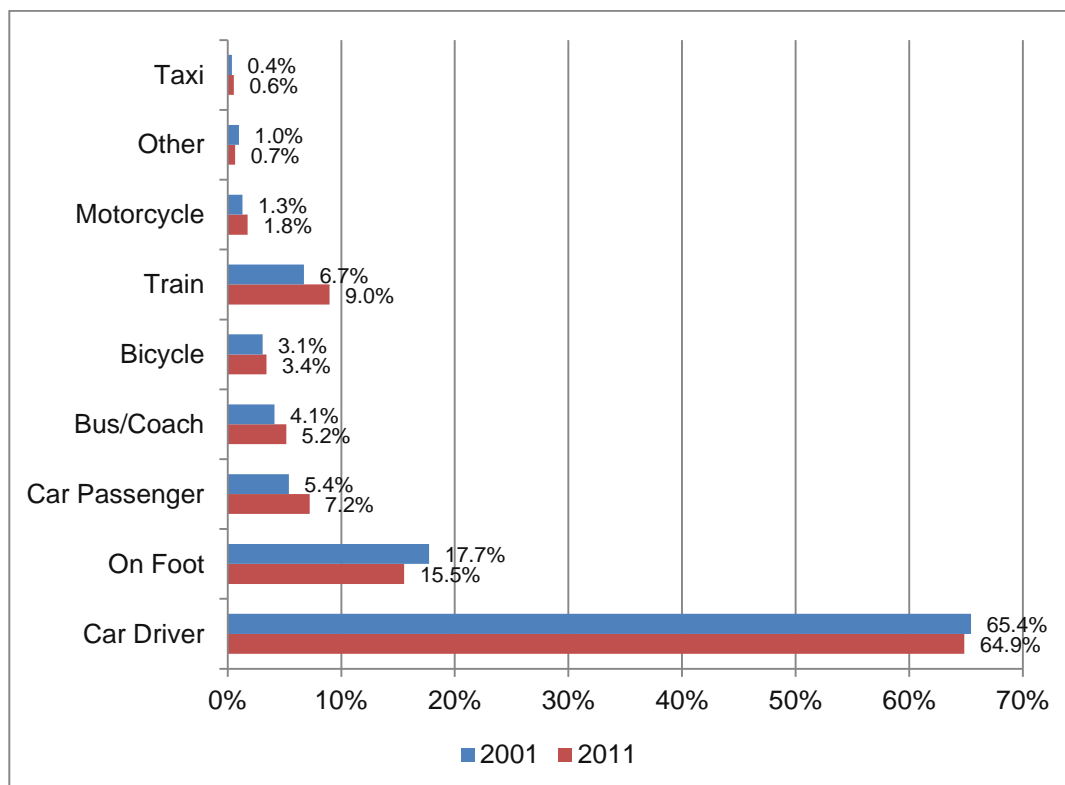


Figure 3—1 Mode of travel to work: West Dorset, Weymouth & Portland residents; 2001 and 2011 Census

Figure 3.2 and 3.3 provide similar mode of travel to work data for jobs in Dorchester in 2001. Figure 3.2 is for external work trips into Dorchester, whilst Figure 3.3 is for internal work trips that start and finish in the town. This data is not currently available for 2011.

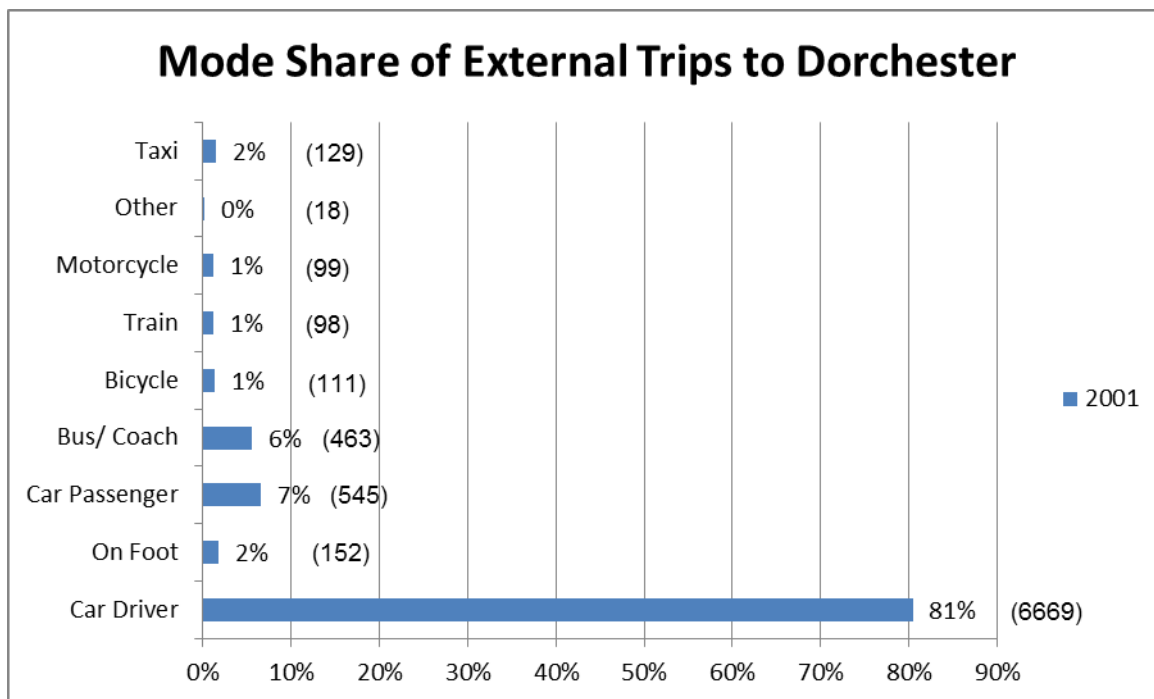


Figure 3—2 Mode share of external work trips to Dorchester, 2001 census (no. of trips)

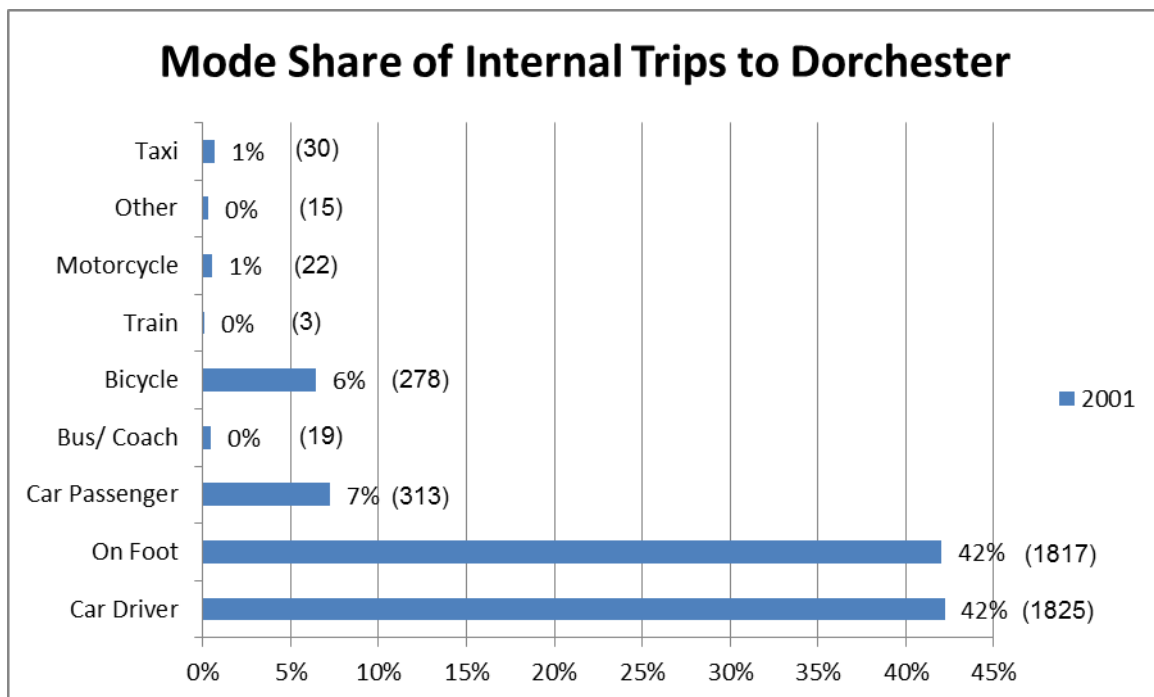


Figure 3—3 Mode share of internal work trips within Dorchester (no. of trips).

The 2001 census indicated that 34% of all jobs in Dorchester were occupied by people who lived in the town, with 66% commuting from external locations. In addition, Figure 3.1 indicates that 81% of external work journeys in 2001 were made as 'car driver'. Between 2001 and 2011 the total level of car use for work journeys by West Dorset, Weymouth and Portland residents remained fairly constant (-0.8%) so it appears that existing car use trends for journeys to work have remained fairly similar over the 10 year period. Based on this evidence and if existing trends continue, then it could be expected that the 2,238 additional jobs created in Dorchester between 2001 and 2011 will generate 1,477 (66%) additional commuting trips from outside the town, with 1,196 (81%) additional external car journeys. This brings the total number of external journey to work trips by car into Dorchester each day to 7,865 at 2011. This figure could now be higher, give the merger of West Dorset and Weymouth and Portland Councils, which has resulted in additional travel to work in Dorchester by former Weymouth and Portland staff. Whilst the council merger was agreed in 2010, the full effects on staff travel were not evident until after the 2011 census.

3.6 Summary Analysis of 2001 and 2011 Census Data

The preceding sections have demonstrated that whilst there are trends apparent in population, employment, car ownership and travel to work characteristics in West Dorset and Weymouth & Portland, travel to work data from the 2001 census still has value, particularly in identifying external trip distribution (where non-residents working in Dorchester live).

2001 travel to work census data was therefore interrogated to determine the origin of work trips made by car into Dorchester. This data is presented alongside the results of the DETP model in Table 3.3 and graphically in Figures 3.4 and 3.5.

Direction of Arrival	DETP Saturn Model (All trip purposes by car)	2001 Census (Travel to work by car as driver)	Difference (percentage points)
East (A35 East)	16%	23%	+7%
South East (A352)	12%	7%	-5%
South (A354 and C126)	39%	42%	+3%
West (A35 West)	4%	10%	+6%
North (A37, C12 and Roman Rd)	31%	18%	-13%
Total	100%	100%	

Table 3—4 Comparison of trip distribution: DETP Saturn Model and 2001 Census Travel to Work Data

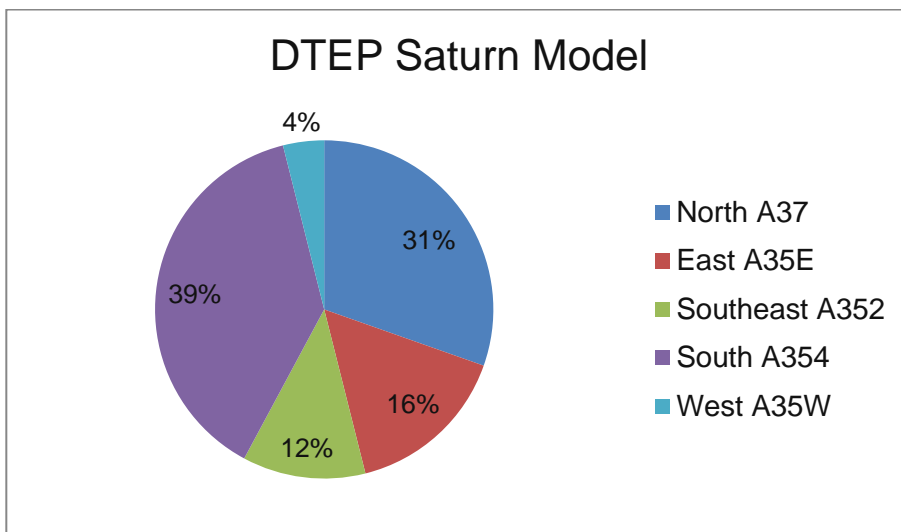


Figure 3—4 Direction of car trips arriving in Dorchester: DTEP Saturn Model

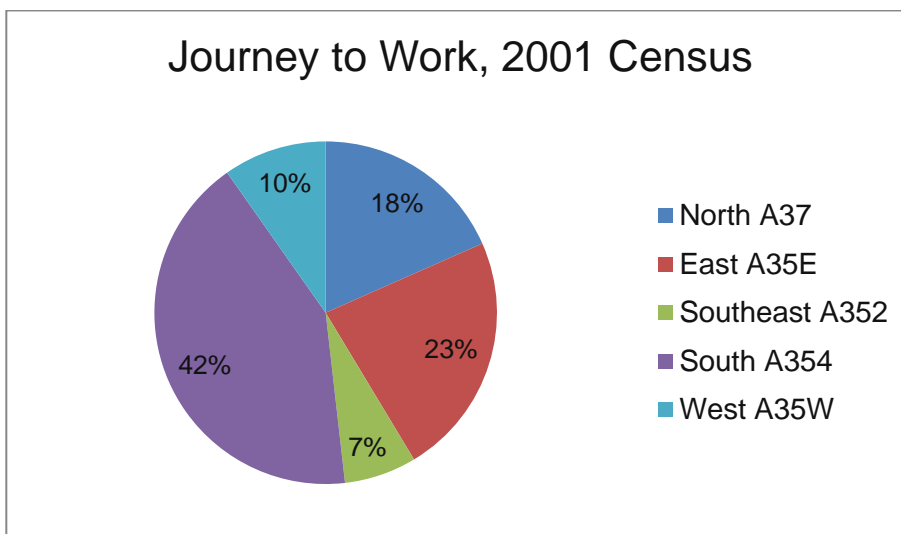


Figure 3—5 Direction of car trips arriving in Dorchester: 2001 Census

Table 3.3 and Figures 3.4 and 3.5 indicate a good correlation between the DETP model and the 2001 census, with differences less than 10% for all routes except from the north, where trips are 13 percentage points higher in the DETP model. It is possible that the distribution of trips into Dorchester changed between 2001 and the DETP model surveys as a result of housing and population growth in particular areas. However, the key growth areas in the Dorset sub region (excluding Dorchester) during this period have been Weymouth and the Poole/Bournemouth conurbation. It is therefore unlikely that there has been a proportionately greater increase in trips from the A37, C12 and Roman Road. A more likely explanation is that the large rural catchment to the north of Dorchester creates a higher proportion of non-work trips into the town than from other corridors. These non-work trips are likely to be for short to medium stay durations, which will still continue to be well-served in Dorchester town centre car parks. If this interpretation is correct, then the 2010 study may have overestimated the number of long stay trips (where P&R will be more attractive) which arrive from the north (A37/C12/Roman Road). In turn, this means that the proportion of potential P&R users from the east, south and west will be higher. This analysis would suggest that potential P&R sites to the south (Stadium Roundabout) will be better placed to capture potential demand and therefore be more attractive and potentially more successful than the 2010 study would suggest.

4 Combined P&R Site and A35 Trunk Road Service Area: Key Findings

4.1 Introduction

In February 2013, Buro Happold was commissioned to investigate whether combining a Park & Ride site with an A35 TRSA on the same site could be delivered without compromising either of these issues or creating additional negative effects, when compared with developing two separate facilities. This report was issued in April 2013 and the key findings are presented below.

4.2 Government advice

DfT circular 1/2008: *Policy on Service Areas and Other Roadside Facilities on Motorways and All-Purpose Trunk Roads in England*, 2008 (para. 128-129 and 132-134) recognises that service areas may, in certain circumstances, be appropriate locations from which to promote P&R. The benefits are highlighted as a reduction in overall vehicle mileage, leading potentially to reduced congestion and improved road safety.

4.3 Benefits of a combined P&R and TRSA

Whilst the two uses serve separate functions, there are a number of common requirements. This gives rise to functional synergies, including the location, range of site facilities and security measures. The junction access, internal access roads, passenger facilities and security features can be shared for the benefit of both sets of users. A combined facility would also help to promote P&R for tourists who stop at the TRSA. In addition, there are considerable economic, safety, accessibility and integration benefits of a combined facility, including the reduced demand on public expenditure for site construction, operation and maintenance.

Analysis of user demand profiles has demonstrated that peak demand for both uses occurs at different times of the day, which alleviates concerns about peak traffic from a combined facility.

The facilities and security provision associated with a TRSA would have substantial benefits for P&R users. This will help to improve the attractiveness to users and realise the potential demand for P&R in Dorchester. In turn, TRSA staff would be able to use the P&R for journeys to/from work.

A combined facility would be larger and more intrusive than a stand-alone P&R site, including the need for longer periods of lighting. Provided that these and other environmental issues can be mitigated to an acceptable degree, the advantages of a combined site could be realised. The Duchy of Cornwall has considerable land holdings in the locality, so opportunities exist for off-site planting to mitigate visual impacts.

Overall, it is considered that there is a strong justification for combining a P&R for Dorchester and TRSA on the A35. There are clear synergies that will help to improve the service offered to both sets of customers. It is therefore recommended that further work is undertaken to develop the proposed facility and a transport assessment prepared to support a future planning application.

5 Potential for Weymouth P&R Site to serve trips to Dorchester

5.1 Background

Buro Happold's April 2013 report, *Combined Park & Ride and A35 Trunk Road Service Area, Dorchester*, also considered the potential for the Weymouth P&R site to serve trips to Dorchester, by restarting the discontinued X11 service. The report considered the practical and economic implications of successful P&R operation to determine if P&R from Weymouth to Dorchester could be successful.

5.2 Summary of Analysis

The analysis indicated that in order to maintain a 15 minute frequency, a P&R site close to Dorchester site would require two P&R buses, whereas four would be required from Weymouth. Given that each vehicle costs in the region of £100,000 - £120,000 per annum to operate, the revenue costs of using the Weymouth site would be double i.e. £400,000 - £480,000 pa, compared with £200,000 - £240,000 p.a. for a site close to Dorchester. Although a higher fare could be charged from Weymouth, it is unlikely that this would cover the additional operational costs. To achieve the same financial position, the fare from Weymouth would have to be double, with the same number of passengers. However, a Weymouth service would have fewer potential passengers, since this site is unable to intercept the same range of journeys that a site closer to Dorchester is able to achieve. The result is that a service from Weymouth would require on-going public subsidy, with little prospect of reaching a break-even position. Many P&R sites across the UK face this problem, which is caused by locating P&R sites too distant from the destination and the subsequent need for an excessive number of vehicles to maintain an attractive service frequency. A future park & ride site close to Dorchester and adjacent to the A35, therefore offers the best opportunity to provide an attractive service frequency with the lowest operational cost.

6 Potential Alternative Sites Adjacent to the A35

6.1 Introduction

As part of this review, Buro Happold was requested to review four further sites on the A35 to the east of Dorchester as set out in Table 6.1.

Site Reference	Site Name	Distance from Dorchester Town Centre (Library); miles
U	Troytown South	4.1
V	Troytown North	4.1
W	Northbrook	5.4
X	Tolpuddle	8.7

Table 6—1 Additional A35 Trunk Road Sites

These four sites were identified by Connect Roads Ltd on behalf of the Highways Agency as a replacement for the Kingston Ponds amenity area². A number of accidents at the Kingston Ponds site led the Highways Agency to ban the right turn into the site, such that it now only serves eastbound traffic. However, illegal right turns were still being undertaken, so relocation of the site was considered the best option.

6.2 Transport Considerations for Park & Ride

From a transport perspective, none of these sites offer the ability to provide a realistic P&R service to Dorchester, due to the distance from the town centre and the excessive number of vehicles required to maintain an attractive frequency. Buro Happold's April 2013 report, *Combined Park & Ride and A35 Trunk Road Service Area, Dorchester*, which is summarised in Chapter 5 of this report, provides evidence to suggest that, in order to be successful, P&R sites need to be located on the edge of the urban area to be served. If this advice is not followed, the number of potential users is reduced while the cost of providing the bus service is increased. This results in a continuous revenue deficit position, with the requirement for on-going financial support. Not only do sites in this position fail to cover their revenue costs, but they also fail to make any contribution towards the capital cost of the scheme.

6.3 Transport Considerations for Trunk Road Service Area

The Department for Transport's Circular 01/2008 Signed Service Areas on All-Purpose Trunk Roads states that half an hour's driving time should be regarded as the maximum that any driver should have to travel without the availability of fuel, refreshments, toilets and parking facilities, including parking for HGVs. It is therefore considered that trunk roads should be sited at distances of approximately 30 minutes or 14 miles, whichever is the lesser.

There are no dedicated trunk road services areas on the A31/A35 near Dorchester. The only driver facilities are petrol filling stations, some with food and toilet facilities. 11 miles to the east there is a Shell petrol filling station at the A35/A31 junction, Bere Regis; and 15 miles to the west of there is a Texaco/Somerfield on the A35 at Bridport. These two facilities are approx. 26 miles apart via the A35, which is almost double the recommended spacing (14 miles). Table 6.1 sets out the spacing in distance and travel time between each of the proposed alternative sites, plus Site J, Stadium Roundabout.

² A30/A35 Exeter to Bere Regis DBFO Contract; Possible Alternative Amenity Area: Relocation of Kingston Ponds; Connect Roads Ltd, 2008.

Potential Site	Distance to Shell, Bere Regis (miles)	Time to Shell, Bere Regis (minutes)	Distance to Texaco, Bridport (miles)	Time to Texaco, Bridport (minutes)
U Troytown South	7	7	19.3	26
V Troytown North	7	7	19.3	26
W Northbrook	6	6	20.7	29
X Tolpuddle	2.5	1	23.8	30
J Stadium Roundabout	12.4	14	14.4	20

Table 6—2 Distance and Time between existing trunk road facilities and potential sites

It is evident from Table 6.2 that each of the sites U, V, W and X are too distant from Bridport Texaco to meet the Department of Transport's 14 mile threshold, as set out in circular 01/2008. However, Site J (Stadium Roundabout) is roughly half way between the two existing facilities and closely matches the DfT's distance criteria (12.4 miles to Bere Regis Shell and 14.4 miles to Bridport Texaco). The Stadium Roundabout site therefore ideally situated to meet the needs of trunk road users.

6.4 Environmental Considerations

Environmental considerations relevant to these sites are considered in Chapter 7.

7 Environmental Considerations

7.1 Introduction

This chapter provides a high-level assessment of the environmental constraints present at the sites under consideration for park and ride and/or trunk road service area facilities, with reference to the earlier feasibility work undertaken in 2010. The sites are compared and an indication of the implications of the environmental constraints for development are provided.

7.2 Approach

This study has been based largely upon a desk study, using information in the public domain, and the 2010 feasibility study; this has been supplemented with the consultants' knowledge of the local area from previous work.

A number of sources of information have been used for this desk study, including:

- Aerial photography, site visits, and Ordnance Survey mapping
- Online interactive mapping databases:
 - 'MAGIC' (Defra, 2013)
 - 'NBN Gateway' (National Biodiversity Network, 2013)
 - 'What's in your backyard?' (Environment Agency, 2013)
 - 'West Dorset maps on the web' (Dorset for you, 2013)
- The Strategic Flood Risk Assessment for West Dorset (Halcrow, 2008).

7.2.1 Sites considered

From the full list of sites considered in the 2010 feasibility study, a number have been discounted from further consideration as they are not appropriate for either a park and ride facility, a trunk road service area, or a combined site with both a park and ride facility and a trunk road service area. In addition, it has been requested that four sites considered as possible trunk road service areas are included within this study. The sites considered in this chapter are summarised in the table below.

Site code	Location	Considered in 2010?	Suitable (in transport terms) for
A	Stinsford	Yes	Park & ride or a combined site
H	Bypass South	Yes	Park & ride or a combined site
J	Stadium Roundabout	Yes	Park & ride or a combined site
L	Weymouth Road West	Yes	Park & ride or a combined site
M	Bypass South	Yes	Park & ride or a combined site
N	Poundbury South	Yes	Park & ride or a combined site
SR	Monkey's Jump	Yes	Park & ride or a combined site
U	Troytown South	No	Trunk road service area
V	Troytown North	No	Trunk road service area
W	Northbrook	No	Trunk road service area
X	Tolpuddle	No	Trunk road service area

Table 7—1 Sites considered in environmental constraints study

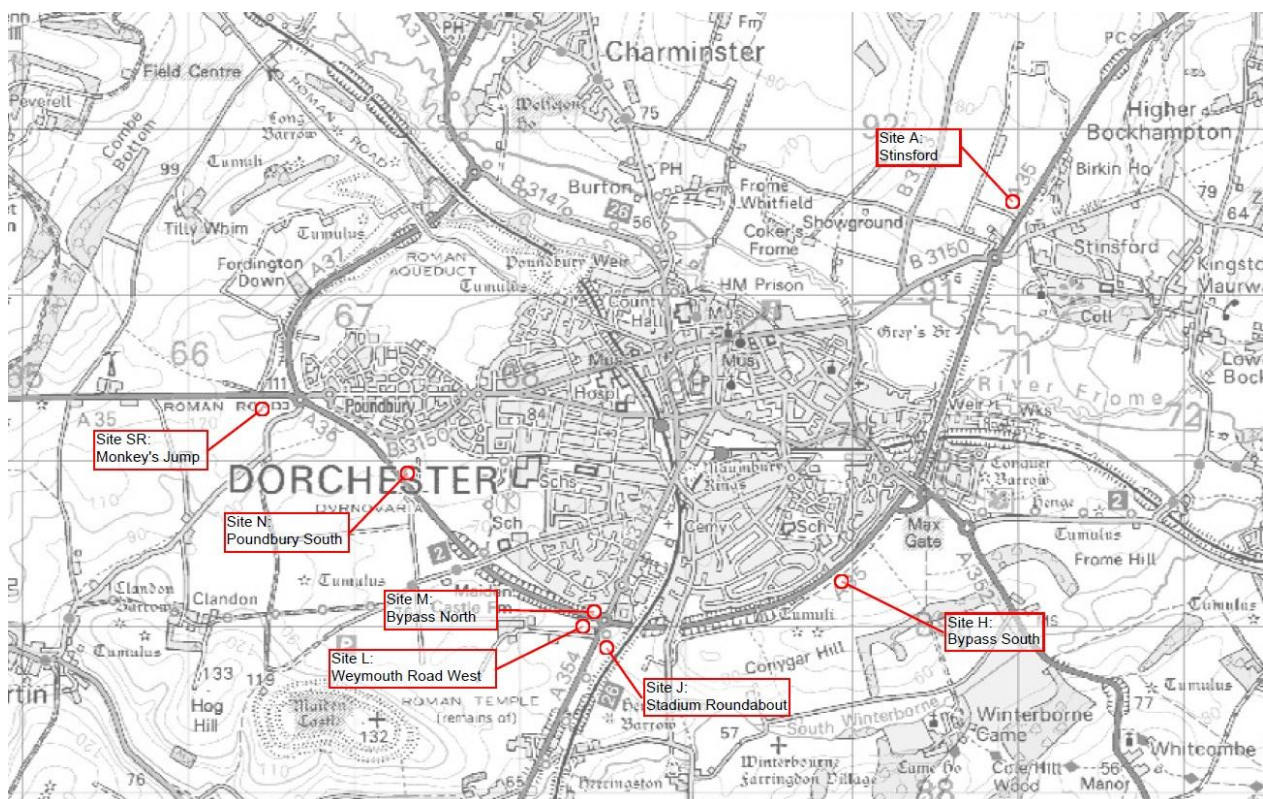


Figure 7—1 Location of sites A, H, J, L, M, N, and SR

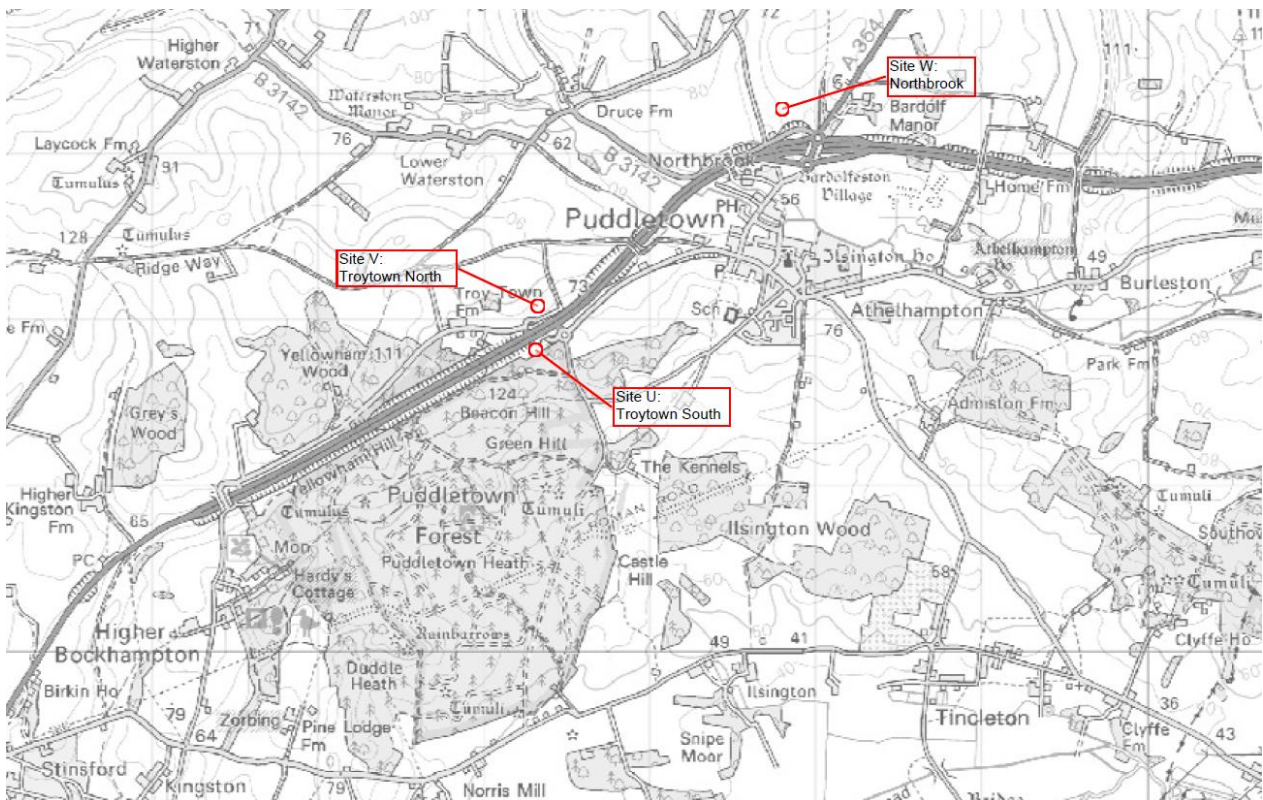


Figure 7—2 Location of sites U, V and W



Figure 7—3 Location of site X

7.3 Types of environmental constraints

The environmental impacts of any project result from a combination of the sensitivity of environmental features on and near the site, the nature of any activities taking place throughout the construction and operation of the development, and design details such as site layout and required construction methods. This desk study identifies environmental constraints: environmental features on and near each site which are potentially sensitive to the type of development being considered. Some environmental features can only be identified through site survey or using existing data which is not in the public domain. Table 7.2 identifies features which can and cannot be identified through desk study.

Topic	Features which can be identified through desk study	Features which cannot be identified through desk study
Landscape	Designated sites e.g. Area of Outstanding Natural Beauty (AONB) General topography	The zone of visual influence (where the site can be seen from) Detailed topography
Heritage	Scheduled Monuments Listed buildings and Conservation Areas	Below-ground archaeology Un-mapped heritage features The extent of a heritage feature's 'setting'
Ecology	Designated sites e.g. Site of Special Scientific Interest (SSSI) Broad habitat types, as visible in aerial photographs Protected species recorded in the local area	Detailed habitat types The presence or absence of protected or other notable species
Flooding	Flood zone indicating risk of flooding from rivers or the sea Sites which have been documented as having previously flooded	Flooding from other sources e.g. groundwater Site-level flood risk and extent
Water and soil quality	Groundwater Source Protection Zones The location of surface water bodies e.g. rivers	Soil and groundwater quality The hydrological regime e.g. depth and flow of groundwater The presence of contaminants in the soil
Air quality and noise	Air Quality Management Areas The location of residential areas, schools and hospitals	Baseline air quality and noise levels at the site

Table 7—2 Environmental constraints and desk study limitations

Dorchester's Conservation Area and Air Quality Management Area are both located in the town centre; neither will be more or less affected by any of the sites, so will not be considered further.

7.4 Site comparison

The following table illustrates the known environmental constraints at each of the sites under consideration. A traffic light system has been used to indicate the relative degree of constraint that these pose, as follows:

- Red: constraint likely
- Orange: potentially constrained
- Green: no known constraint.

Note that the environmental constraints do not have equal weight in planning or legal terms and do not equate to the potential significance of any environmental impacts. They provide an indication of the likelihood that a site is subject to certain environmental constraints. Simply adding up the number of red, orange or green boxes will not, therefore, provide a ranked order of preference for the sites.

	Landscape			Ecology			Heritage		Water		Air / Noise
	AONB	Prominent location (on a hill)	Urban sprawl / urbanisation	Designated sites nearby	Protected species records nearby	Protected species habitat potential	Known on-site features	Nearby features	At risk of flooding	Sensitive water body nearby	Close to residential area
A: Stinsford	Green	Orange	Red	Orange	Orange	Orange	Green	Red	Green	Red	Green
H: Bypass South	Orange	Green	Red	Orange	Orange	Orange	Green	Orange	Green	Orange	Orange
J: Stadium Roundabout	Red	Orange	Red	Green	Orange	Orange	Green	Red	Red	Red	Orange
L: Weymouth Road West	Orange	Green	Red	Orange	Orange	Orange	Green	Red	Orange	Red	Red
M: Bypass North	Green	Orange	Red	Orange	Orange	Orange	Green	Orange	Orange	Red	Red
N: Poundbury South	Red	Orange	Red	Orange	Orange	Orange	Green	Red	Green	Orange	Orange
SR: Monkey's Jump	Red	Red	Red	Orange	Orange	Orange	Green	Orange	Green	Green	Green
U: Troytown South	Green	Green	Red	Orange	Orange	Red	Green	Orange	Green	Orange	Green
V: Troytown North	Green	Red	Red	Orange	Orange	Orange	Green	Orange	Green	Orange	Green
W: Northbrook	Green	Orange	Red	Orange	Orange	Orange	Green	Orange	Red	Red	Green
X: Tolpuddle	Green	Orange	Red	Orange	Orange	Red	Green	Orange	Green	Orange	Green

Table 7—3 Environmental constraints at each site



Figure 7—4 AONB, SSSI and Scheduled Monuments in the local area (© Defra)

7.5 Site detail

Further information on the environmental constraints at each site, and justification for the ratings provided in the table above, is provided in the following sections.

7.5.1 Site A: Stinsford

This site lies outside of the AONB and is on greenfield land above and outside the village of Stinsford, as contained by the A35 / B3150. The site appears to be largely arable, although the hedgerows around it may be of higher ecological value. No heritage features have been identified on the site, but it lies very close to Kingston Maurward House and its gardens. No flooding has been identified at this site in the Strategic Flood Risk Assessment for the local area, but the site lies less than one kilometre from the River Frome (a Site of Special Scientific Interest).

7.5.2 Site H: Bypass South

Although situated just outside the AONB, this site is located within an area identified as being Land of Local Landscape Importance (LLLI). It lies on a slope just outside the hard urban edge of Dorchester that is provided by the A35, but is contained to the south by a hill and woodland. The site appears to be largely arable, although the hedgerows around it may be of higher ecological value. No heritage features on the site have been identified, but there are a number of archaeological features (tumuli, iron age fort etc.) in the local area. No flooding has been identified at this site in the Strategic Flood Risk Assessment for the local area, although the River Frome (a Site of Special Scientific Interest) lies approximately one kilometre to the north.

7.5.3 Site J: Stadium Roundabout

This site is within the AONB and outside the urban edge delineated by the A35, but contained between the A354 and the railway line. The south of the site is more prominent than the north, where it slopes upwards. The site appears to be largely arable, although the hedgerows around it may be of higher ecological value. If an area to the east of the railway is used for flood storage, this would affect an area likely to be of higher ecological value. No heritage features have been identified on the site, but there are features in the local area (tumuli etc.) and the site is visible from Maiden Castle Iron Age hill fort. Flooding has occurred in the lower lying areas of the site from groundwater (a sensitive water body).

7.5.4 Site L: Weymouth Road West

Although situated just outside the AONB, this site is located within the LLLI. It is outside the A35 urban boundary, but partially contained by Maiden Castle Farm and its track, on low-lying land. The site appears to be largely arable, although the hedgerows around it may be of higher ecological value, particularly the woodland near roundabout. No heritage features have been identified on the site, but there are features in the local area (tumuli etc.) and the site is likely to be visible from Maiden Castle Iron Age hill fort. The Strategic Flood Risk Assessment for the local area indicates that flooding has been recorded on or near this site, although the extent of this is not known; the 2010 study identified the site itself as being of low risk of flooding but constrained in terms of potential surface water run-off due to proximity to an ephemeral stream.

7.5.5 Site M: Bypass North

This site is outside the AONB, and its development would involve infilling between the A35 ring road and the built up area. The low-lying site appears to be largely arable, although the hedgerows around it may be of higher ecological value, particularly the woodland near the roundabout. No heritage features have been identified on the site, but there are features in the local area (tumuli etc.). The Strategic Flood Risk Assessment for the local area indicates that flooding has been recorded on or near this site, although the extent of this is not known; the 2010 study identified the site itself as being of low risk of flooding but close to the floodplain of an ephemeral stream, so constrained in terms of potential surface water run-off.

7.5.6 Site N: Poundbury South

Located within the AONB, this site lies within the A35 urban boundary and on the edge of the built-up area, but part-way up a slope. The site appears to be largely arable, although the hedgerows around it may be of higher ecological value, particularly the woodland close to the A35. No heritage features have been identified on the site, but there are features in the local area (tumuli etc.) and the site is likely to be visible from Maiden Castle Iron Age hill fort. It also lies close to the remains of Maiden Castle settlement. No flooding has been identified at this site in the Strategic Flood Risk Assessment for the local area. There are no mapped surface water bodies nearby, although groundwater may be at risk.

7.5.7 Site SR: Monkey's Jump

This site is in a prominent location within the AONB and outside the A35 ring road. The site appears to be largely arable, although the hedgerows around it may be of higher ecological value. No heritage features on the site have been identified, but there are a number of archaeological features (tumuli, Roman remains etc.) in the local area. No flooding has been identified at this site in the Strategic Flood Risk Assessment for the local area and there are no mapped surface water bodies nearby, although groundwater may be at risk.

7.5.8 Site U: Troytown South

This site is in an undeveloped rural area outside the AONB, part-way a hill, but contained between roads and a wooded hill. It appears to be largely arable, although the dense hedgerows and mature woodland around are likely to be of higher ecological value. No heritage features on the site have been identified, but there are the remains of medieval settlements and other features in the local area. No flooding has been identified at this site in the Strategic Flood Risk Assessment for the local area, although the River Piddle / Trent lies less than one kilometre to the northeast.

7.5.9 Site V: Troytown North

In an undeveloped rural area outside the AONB, partway up a hill and visible from the south, the site appears to be largely arable, although the hedgerows around it may be of higher ecological value. No heritage features on the site have been identified, but there are the remains of medieval settlements and other features in the local area. No flooding has been identified at this site in the Strategic Flood Risk Assessment for the local area, although the River Piddle / Trent lies less than one kilometre to the northeast.

7.5.10 Site W: Northbrook

This site is outside of the AONB and outside the edge of the village of Northbrook. It lies part-way up a hill, but contained to the south by existing roads and banks. The site appears to be largely arable, although the hedgerows around it may be of higher ecological value. No heritage features on the site have been identified, but there are the remains of medieval settlements and other features in the local area. No flooding has been identified at this site in the Strategic Flood Risk Assessment for the local area, but the site lies close to the River Piddle / Trent.

7.5.11 Site X: Tolpuddle

In an undeveloped rural area outside the AONB, this site is close to the top of a hill, but contained between roads and banks. Although the roads which surround it will provide some degree of habitat severance for some species, it is likely that the trees and hedgerows on site connect with hedgerows and wooded areas nearby for more mobile species. No heritage features on the site have been identified, but there are a number of archaeological features (tumuli, iron age fort etc.) in the local area, particularly to the north of the site. No flooding has been identified at this site in the Strategic Flood Risk Assessment for the local area, although the River Piddle / Trent lies less than one kilometre to the south.

7.6 Findings in relation to the original 2010 feasibility study

Sites A (Stinsford), H (Bypass South), and Site N (Poundbury South) were rejected in the 2010 study, due to operational problems accessing the sites directly from the A35. Sites U (Troytown South), V (Troytown North), W (Northbrook) and X (Tolpuddle), the Trunk Road Service Area sites, were not part of the original feasibility study due to their unsuitability as park and ride locations.

The preferred sites, which were feasible from a transport point of view, were:

- Site I: Cricket Ground
- Site J: Stadium Roundabout (Weymouth Road East)
- Site K: Weymouth Road West
- Site L: Weymouth Road West 2 (opposite Site J)
- Site M: Bypass North
- Site S / SR: Monkey's Jump.

Of the sites taken forward for further consideration in 2010, Site K (Weymouth Road East) was rejected due to the effects its development would have on landscape, particularly the difficulty in mitigating the effect on views from Maiden Castle. Site I (Cricket Ground) was discounted due to its importance as a local amenity space.

In terms of landscape impacts, the preferred site was M (Bypass North), which was predicted to have only slight adverse impacts on landscape / townscape. Sites J (Stadium Roundabout), L (Weymouth Road East), and SR (Monkey's Jump) were considered to have moderate adverse effects.

In terms of flood risk, the preferred sites, in descending order of preference were SR (Monkey's Jump), L (Weymouth Road East), M (Bypass North) and, least preferred, J (Stadium Roundabout).

Site L was rejected due to transport issues (the location of the access junction was likely to cause interference with the operation of Stadium Roundabout, due to the heavy right turn movement from the north).

Figure 7.5 summarises the findings of the 2010 study.

PLANNING				KEY
SELECTED SITE	LANDSCAPE	FLOODING	TRANSPORT	
I. Cricket Ground	●	●	●	● LOW RISK ● MEDIUM RISK ● HIGH RISK ● NOT REALISTICALLY RESOLVABLE
J. Weymouth Road East	●	●	●	
K. Weymouth Road West 1	●	●	●	
L. Weymouth Road West 2	●	●	●	
M. Bypass north	●	●	●	
SR. Monkey's Jump roundabout	●	●	●	

Figure 7—5 Conclusions of 2010 phase one feasibility study: planning risks

The three overall preferred sites were:

- Site J: Stadium Roundabout – considered to require a high level of technical intervention to address flooding risks and mitigation to reduce landscape impacts
- Site M: Bypass North - considered to require a medium level of technical intervention to address flooding risks.
- Site SR: Monkey's Jump - considered to require a low level of technical intervention to address flooding risks but with a high planning risk associated with landscape impacts.

On the basis of the additional information considered in this study, Table 7.4 provides comments on the original 2010 study findings.

Table 7—4 Comments on 2010 study findings within the context of this 2013 study

Site	Update to 2010 study
A: Stinsford	Transport constraints aside, this site poses a planning risk in terms of its prominent location and potential impacts on the setting of a heritage feature. Effects on ecology, especially the nearby SSSI, are not quantifiable at this stage.
H: Bypass South	Transport constraints aside, this site could pose planning risks in terms of landscape effects, but could otherwise be less environmentally constrained than other sites.
J: Stadium Roundabout	The effects on landscape are potentially higher for this AONB site than the 2010 shortlisted sites which are in the LLLI or urban area. Combining a trunk road service area on this site could increase the significance of any landscape and visual impacts in this location.
L: Weymouth Road West	The main risks associated with this site are the proximity of Maiden Castle and potential effects relating to groundwater and flooding, as identified in 2010.
M: Bypass North	In environmental terms, this appears to be the least constrained site, although there are risks associated with groundwater. Ecological impacts cannot be quantified at this stage.
N: Poundbury South	Transport constraints aside, this site is within the AONB and potentially has risks associated with its position in a heritage landscape, although it lies within the ring road, which is positive.
SR: Monkey's Jump	As identified in 2010, the main risks associated with this site are related to landscape.
U: Troytown South	Of the trunk road service area locations considered, this is the least visually prominent. All four potential trunk road service area sites have as potential risks associated with ecology and below ground archaeology.
V: Troytown North	Of the trunk road service area locations considered, this is the most visually prominent. All four potential trunk road service area sites have as potential risks associated with ecology and below ground archaeology.
W: Northbrook	All four potential trunk road service area sites have as potential risks associated with ecology and below ground archaeology. In addition, this site is close to the River Piddle / Trent SSSI, which could pose particular constraints in locating a fuel station.
X: Tolpuddle	All four potential trunk road service area sites have as potential risks associated with ecology and below ground archaeology.

7.7 Conclusions

All of the sites are subject to environmental constraints to some degree. In all cases, there are likely to be additional constraints which can only be identified through detailed site survey. In addition, the importance attributed to each constraint requires the weighing up of potentially conflicting policy and stakeholder aspirations, through consultation, and an examination of the specific proposals at each site to determine potentially significant environmental impacts.

On the basis of the information obtained through this desk study, Site M (Bypass North) appears to be the least constrained, with Site H (Bypass South) likely to be the next least constrained. However, these were rejected on the basis of transport feasibility. Site H (Bypass South) is an on-line option, so access would only be available to westbound traffic. The two sites shortlisted in 2010, Site J (Stadium Roundabout) and Site SR (Monkey's Jump), are both environmentally constrained: Stadium Roundabout in terms of landscape and flooding; Monkey's Jump particularly in terms of landscape. These sites, however, were considered most appropriate from a transport point of view. Whether the transport need outweighs the environmental planning risks is a decision for the local planning authority, which could be informed by further environmental studies and scheme design at the preferred site or sites.

7.8 References

Defra (2013) *MAGIC*, <http://magic.defra.gov.uk/>, accessed 8 May 2013

Dorset for you (2013) *West Dorset maps on the web*, <http://webapps.westdorset-dc.gov.uk/Mapping/Pages/MapMain.aspx>, accessed 8 May 2013

Environment Agency (2013) *What's in your backyard?*, <http://www.environment-agency.gov.uk/homeandleisure/37793.aspx>, accessed 8 May 2013

Halcrow (2008) *West Dorset District Council Strategic Flood Risk Assessment for Local Development Framework Level 1*, <http://www.dorsetforyou.com/media.jsp?mediaid=132216&filetype=pdf>

National Biodiversity Network (2013) *NBN Gateway*, <http://data.nbn.org.uk/>, accessed 8 May 2013

8 Conclusions and Recommendations

8.1 Review of 2010 Study

This review has concluded that the methodology adopted for assessing the 20 potential P&R sites was robust and the reasons for shortlisting sites remains valid.

8.2 Validation of 2010 P&R Report's findings

2001 and 2011 census data has been used to validate the results of the modelling results, which were extracted from the DTEP Saturn Model. This assessment indicated a strong correlation between the two sets of data, except for trips travelling from the north, where there appears to be a stronger prevalence of non-work trips from the large rural catchment. Non-work trips tend to be short to medium stay and are less attracted to P&R, than long stay work trips. If this interpretation is correct, then the 2010 study may have overestimated potential P&R trips from the north and underestimated trips from the west, south and east. This suggests that sites to the south of Dorchester, in the vicinity of Stadium Roundabout would be more successful at capturing park and ride trips. Conversely, sites to the east, such as in the vicinity of Monkey's Jump, which would be more reliant on attracting trips from the north, are likely to be less successful.

8.3 Combining P&R and TRSA facilities

Buro Happold's April 2013 report *Combined Park & Ride and A35 Trunk Road Service Area, Dorchester* demonstrated that there are clear advantages in combining a P&R and TRSA. A combined site gives rise to functional synergies, including the location, range of site facilities and security measures. The junction access, internal access roads, passenger facilities and security features can be shared for the benefit of both sets of users. A combined facility would also help to promote P&R for tourists who stop at the TRSA. In addition, there are considerable economic, safety, accessibility and integration benefits of a combined facility, including the reduced demand on public expenditure for site construction, operation and maintenance.

A combined facility would be larger and more intrusive than a stand-alone P&R site, including the need for longer periods of lighting and underground fuel storage. Provided that these and other environmental issues can be mitigated to an acceptable degree, the advantages of a combined site could be realised.

8.4 Potential for P&R service from Weymouth P&R site to serve Dorchester

Buro Happold's April 2013 report, *Combined Park & Ride and A35 Trunk Road Service Area, Dorchester*, also considered the potential for the Weymouth P&R site to serve trips to Dorchester, by restarting the discontinued X11 service. The report considered the practical and economic implications of successful P&R operation to determine if P&R from Weymouth to Dorchester could be successful. The analysis indicated that in order to maintain a 15 minute frequency, a P&R site close to Dorchester would require two P&R buses, whereas four would be required from Weymouth. The result is that a service from Weymouth would require on-going public subsidy, with little prospect of reaching a break-even position. A future park & ride site close to Dorchester and adjacent to the A35, therefore offers the best opportunity to provide an attractive service frequency with the lowest operational cost.

8.5 Alternative Sites Adjacent to the A35

Four additional sites were considered for P&R on the A35 east of Dorchester. None of these sites offer the ability to provide a realistic P&R service to Dorchester, due to the excessive distance from the town centre. In order to be successful, P&R sites need to be located on the edge of the urban area to be served.

Each of the four sites was also considered as potential stand-alone TRSAs. All were found to be too distance from the existing Bridport Texaco to meet the Department for Transport's spacing requirements, as set out in Circular 01/2008. However, site J (Stadium Roundabout) closely matches the DfT's distance criteria and is therefore ideally situated to meet the needs of trunk road users.

8.6 Environmental Consideration

The report provides a high-level assessment of the environmental constraints present at the sites under consideration for park and ride and/or trunk road service area facilities, with reference to the earlier feasibility work undertaken in 2010. Each site is considered in turn, plus the four additional A35 trunk road sites.

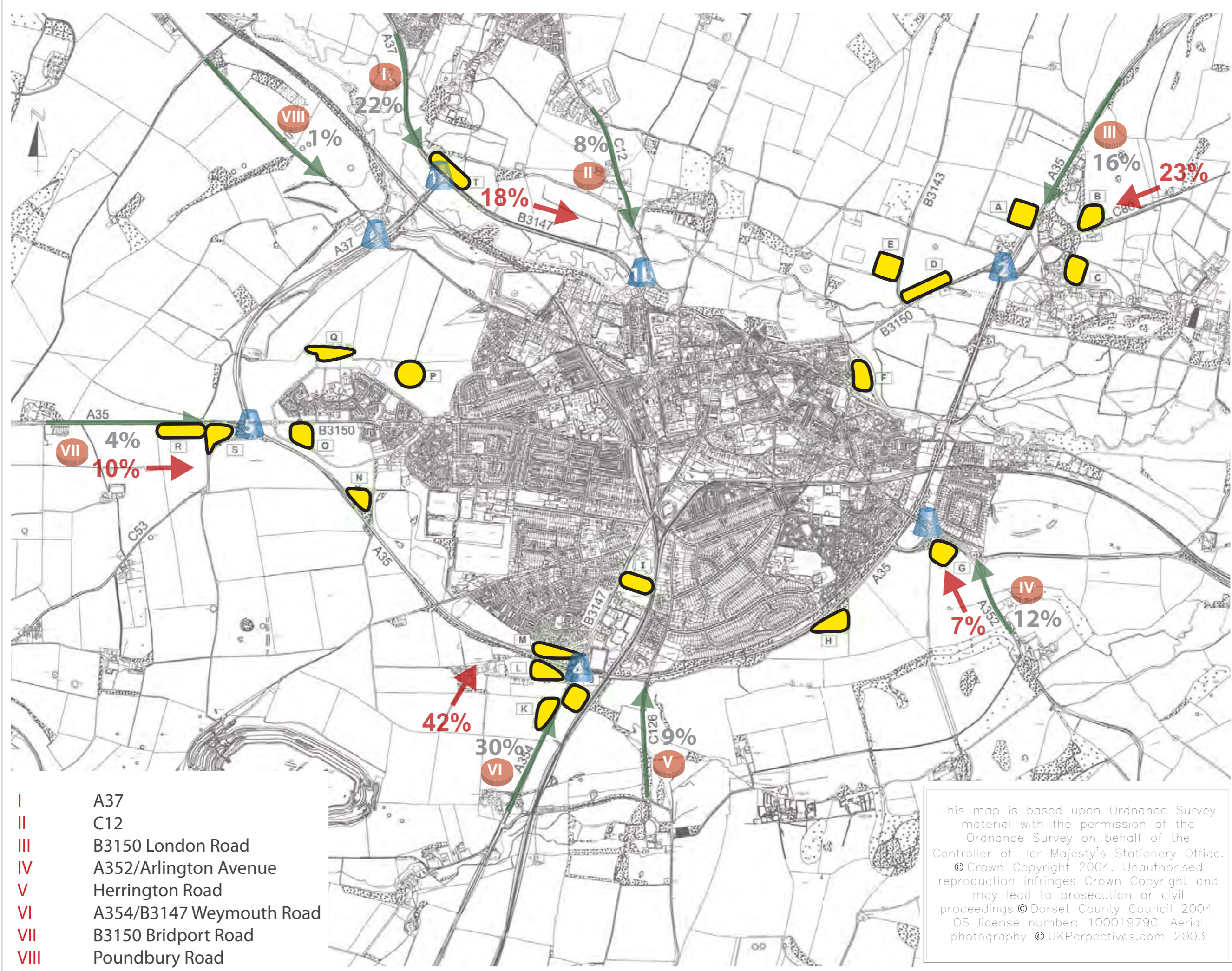
All of the sites are subject to environmental constraints to some degree. In all cases, there are likely to be additional constraints which can only be identified through detailed site survey. In addition, the importance attributed to each constraint requires the weighing up of potentially conflicting policy and stakeholder aspirations, through consultation, and an examination of the specific proposals at each site to determine potentially significant environmental impacts.

On the basis of the information obtained, Site M (Bypass North) appears to be the least constrained, with Site H (Bypass South) likely to be the next least constrained. However, these were rejected on the basis of transport feasibility. The two sites shortlisted in 2010, Site J (Stadium Roundabout) and Site SR (Monkey's Jump), are both environmentally constrained: Stadium Roundabout in terms of landscape and flooding; Monkey's Jump particularly in terms of landscape. These sites, however, were considered most appropriate from a transport point of view.

8.7 Summary

Overall, it is considered that there is a strong transport justification for locating a P&R site for Dorchester on the A35 in the vicinity of Stadium Roundabout. Combining the site with a TRSA would provide many synergies, reduce the cost to the public purse and bring forward implementation, such that the environmental enhancements envisaged in the Dorchester Transport and Environmental Plan will be realised much earlier. Of the sites under consideration, site J (Stadium Roundabout) is considered to be most suitable for both P&R and TRSA, although environmental concerns will require further investigation and mitigation. Evidence presented in Chapter 3 would suggest that site SR, adjacent to Monkey's Jump roundabout, should no longer be considered as a viable option, due to the reduction in estimated P&R users arriving from the north.

It is therefore recommend that further work is undertaken to develop a P&R and TRSA facility at site J, south of Stadium Roundabout and all environmental and engineering investigations are completed with a view to submitting a planning application at the earliest opportunity.



KEY:

- SITES IDENTIFIED BY WEST DORSET DISTRICT COUNCIL FOR POTENTIAL PARK & RIDE USE
- DISTRIBUTION OF AM PEAK HOUR CAR ARRIVALS WITH A DESTINATION IN DORCHESTER, DETP SATURN MODEL, DORSET COUNTY COUNCIL
- DISTRIBUTION OF JOURNEY TO WORK TRIPS (CAR DRIVER ONLY) WITH A DESTINATION IN DORCHESTER, 2001 CENSUS

- I A37
- II C12
- III B3150 London Road
- IV A352/Arlington Avenue
- V Herrington Road
- VI A354/B3147 Weymouth Road
- VII B3150 Bridport Road
- VIII Poundbury Road

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PROJECT
DORCHESTER PARK & RIDE
TRUNK ROAD SERVICE AREA:
FEASIBILITY STUDY UPDATE

DRAWN BY	LB and OR
DATE	20/5/13
JOB NO.	031633
DRG NO.	FIGURE 2.1

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