Appendix J

Land at Whitchurch Evaluation

J1 Land at Whitchurch

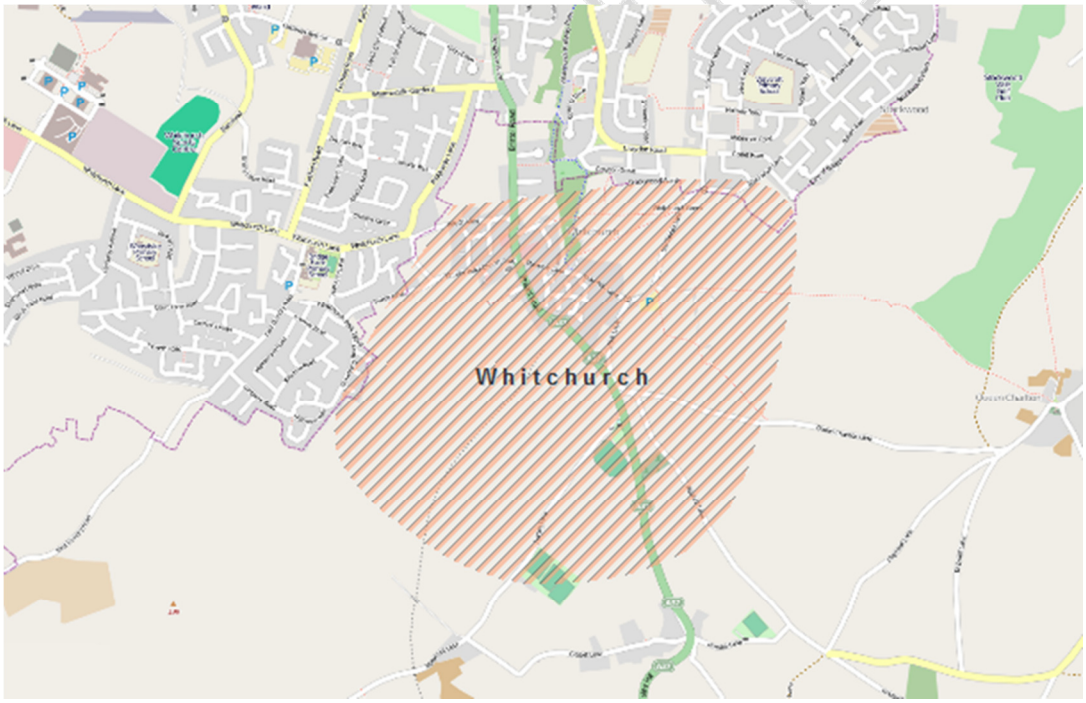
J1.1 Overview

The development area is located on Green Belt land which lies around the village of Whitchurch, separating it from the southern suburbs of Bristol. The land is mainly untended grassland with some pasture and grazing land and areas of recreational land. Within this area lies Horse World and the Bristol Barbarians rugby fields.

To the south and east of this location lies an area of open countryside with small clusters of dwellings along the lanes. Maes Knoll, an ancient hilltop fort, forms a significant landmark to the south west.

The northern and western boundaries of this location are marked by existing residential areas of Bristol which largely back onto this location. This location wraps around Whitchurch which has a mix of retail and social functions alongside residential.

Figure 23: Land at Whitchurch Location



J1.2 Census (2011) Mode Share Review

A review of the recently released journey to work information for the ward indicated the following mode share. The results have been ranked to compare the mode share with other B&NES wards and against each of the other locations evaluated.

Table 91: Census Mode Share Review, Publow and Whitchurch Ward[41]

Mode	Percentage of Journeys to Work	Ward rank within B&NES (of 37)	Ward rank amongst locations examined (of 8)
Walk	6%	34	8
Cycle	1%	33	8
Bus	7%	19	7
Train	0%	37	8
Car as driver	80%	31	8
Car as passenger	5%	The overall impact of these modes on trip generation from each location is negligible and ward to ward differences between these modes are measures in tenths of percentages. Rankings were therefore not calculated.	
Taxi	0%		
Motorcycle	1%		
Other Public Transport	0%		
Other	0%		
Total	100%	N/A	N/A
Of which sustainable[42] modes account for:	14%	31	8

This ward has the lowest percentage (14%) of working residents using non-car modes, and the highest percentage (80%) of car drivers of all wards examined in this study. The location of the A37 running through the ward presents a significant opportunity for residents to use bus services, but bus use is below average in comparison to other wards examined. The ward performs poorly in terms of the proportion of trips undertaken on foot or by bicycle.

Overall the Publow and Whitchurch ward is the least sustainable ward examined in this study (in terms of travel to work) and one of the least sustainable in the authority.

J1.3 Sustainable Transport

J1.3.1 Walking

This location is located on the southern fringes of the Bristol urban area. This location bounds existing residential development.

A number of Public Right of Way routes run through this location linking the Bristol suburbs to the wider countryside.

ACCESSION analysis indicates that it is possible to walk into Whitchurch village within 20 minutes.

As the Census analysis indicates walking trips to work are somewhat limited primarily by the distance to major employment centres.

[41] Table excludes "work from home" and "not in employment" as these modes do not impact on the modal choice for off-site trips.
[42] Sustainable modes are considered to be walk, cycle, bus, rail, other public transport.

J1.3.2 Cycling

NCN 3 bisects this location along the A37 and the development area would benefit from strategic cycle connectivity towards central Bristol.

ACCESSION analysis indicates it is possible to cycle to edge of Bristol city centre and the edge of Keynsham town centre in approximately 20 minutes.

J1.3.3 Public Transport

The nearest railway stations are Keynsham (4.3km) and Parson Street (4.5km), with the main hub at Bristol Temple Meads 5.5km from this location. Bus use is therefore the only form of public transport operating within a reasonable distance of this location.

This location benefits from a relatively high number of bus services operating along the A37 and Craydon Road. Frequent express bus services serve Bristol city centre and beyond to key destinations such as Cribbs Causeway and towns and villages to the south. Routes and service frequencies are listed below:

Table 92: Bus Services within 400m of Whitchurch

Service No.	Route	Frequency (two-way)	Bus Stop Location
51	Bristol Hengrove depot	15 mins	Ridgeway Lane
376	Bristol-Wells Street	15 mins	A37
379	Bristol-Pensford-Paulton-Midsomer Norton-Radstock	30 mins	A37
54	Cribbs Causeway-Stockwood	6 mins	Craydon Road
515	Stockwood-Hartcliffe	30 mins	Craydon Road

ACCESSION analysis indicates that:

- Hengrove, Pensford and Whitchurch can be reached in under 15 minutes by bus from this location;
- It is possible to reach Bristol city centre in approximately 30 minutes; and,
- The distance from train stations precludes travel rail journeys of fewer than 30 minutes.

Public transport provision can be considered to be good in comparison with the other greenfield locations considered in this study.

The orientation of the development area would facilitate diversion of buses from the A37 into this location reducing walking distances for residents and increasing the visibility of services. Connectivity to other bus stops in the local area, such as those along Whitchurch Lane, Stockwood Road and Staunton Lane, should be given consideration should this location come forward.

J1.4 Highway Impact

J1.4.1 Access

This location lies around the A37 (Bristol Road) which provides a direct link to Bristol city centre. This location includes a number of narrow lanes which radiate out through the surrounding countryside including Queen Charlton Lane and Wollard Lane.

The A37 into Bristol suffers from considerable congestion and journey times are poor in comparison to many other routes into the city. The primary alternative, the A4 to the north, is also congested, as is the A4174 Callington Road.

Charlton Road, via Willard Lane, provides a link to south-west Keynsham allowing drivers to avoid the congested A4174-A4-Durley Hill route.

J1.4.2 Vehicular Trips

Trip generation has been based on 800 dwellings, of which 35% are affordable homes, with a primary school provided. A vehicular modal share of 81% has been assumed based on that for the Publow and Whitchurch ward.

Table 93: Peak Hour Trip Generation

Offsite Trips	**AM Peak Hour**		**PM Peak Hour**	
	Inbound	**Outbound**	**Inbound**	**Outbound**
Vehicles	127	336	360	213

J1.4.3 Destination and Assignment

Distributions for car trips originating in the Publow and Whitchurch ward are as shown below:

Table 94: Distribution of Car Trips from Publow and Whitchurch Ward

Destination	**Percentage of Vehicular Trips**
Bath	4%
Keynsham	6%
Midsomer Norton/Radstock/Westfield	2%
Other B&NES	16%
City of Bristol	52%
South Gloucestershire	8%
Somerset	1%
Wiltshire	2%
Other	9%
TOTAL	100%
Contained with B&NES	28%

Residents of the Publow and Whitchurch ward typically work in Bristol (52% of car trips) with 16% of car trips to other wards in B&NES (i.e. other than Bath, Keynsham, Midsomer Norton, Radstock and Westfield).

It is forecast that 53% of trips to central Bristol will use the A37 with 6% using the A4. In total, 15% of Bristol trips have been routed along the A4174 via Callington Road and the A4 with 12% of Bristol trips destined to Brislington and the remaining trips staying in south Bristol.

Trips to Keynsham are forecast to use Charlton Road, while this is also expected to be an attractive route for journeys destined to South Gloucestershire and Wiltshire.

Assignment of vehicular trips has been undertaken and this identifies the following key impacts:

- An increase in demand along the A37 into Bristol will be equivalent to 130 to 160 two-way trips per hour.
- Increase in demand along the A4174 towards the A4 will be equivalent to 125 to 155 two-way trips per hour, with the majority of these trips destined for the A4174.
- South of this location an additional 85-105 two-way trips per hour are forecast on the A37 with these trips destined for other areas of the local authority.
- Along Charlton Road an additional 70-90 two-way peak hour trips are forecast with around 35 of these vehicles destined to Keynsham.
- The development will result in an additional 20-30 vehicular trips per hour through Saltford to/from Bath. These trips will disburse across approaches into Bath resulting in negligible highways impact within the city.

Table 95: Additional Vehicular Trips Resulting from Development

Highway/Area	**AM Peak Hour**				**PM Peak Hour**			
	NB	**SB**	**EB**	**WB**	**NB**	**SB**	**EB**	**WB**
A4 east of Callington Rd			80	30			50	85
A4 west of Callington Rd			4	10			11	6
A4174 Callington Rd	92	34			58	98		
A37 north of Callington Rd			35	93			99	59
A37 south of access	63	23			39	67		
Durley Hill			33	90			96	57
Bristol Road (Keynsham)			21	8			12	20
Charlton Road	52	19			32	55		
A4 West of Saltford			16	6			10	17
A4 Bath Rd to/from Bristol			80	30			50	85
A4174 Ring Road	90	33			57	96		

J1.4.4 Changes in Volume and Capacity

The potential impact of development in terms of percentage increase in 2029 traffic volumes has been calculated. This identifies the A37, A4174 Callington Road, A4 and Durley Hill as those highways experiencing the most significant impacts as a result of development.

Table 96: Increase in Vehicular Trips as Proportion of 2029 Background Traffic

Highway/Area	AM Peak Hour				PM Peak Hour			
	NB	SB	EB	WB	NB	SB	EB	WB
A4 east of Callington Rd			6%	3%			4%	5%
A4 west of Callington Rd			0%	1%			1%	0%
A4174 Callington Rd	14%	4%			7%	12%		
A37 north of Callington Rd			5%	17%			10%	7%
A37 south of access	10%	2%			5%	6%		
Durley Hill			4%	9%			8%	7%
Bristol Road (Keynsham)			2%	1%			1%	2%
A4 West of Saltford			1%	0%			1%	2%
A4 to/from Bristol			8%	1%			4%	5%
A4174 Ring Road	7%	2%			4%	5%		

Highway link volume/capacity ratio has been calculated for key links in the study area. This identifies potential congestion and delays as a result of insufficient link capacity along the A4 west of Saltford with additional traffic largely attributable to cumulative growth, including that arising from the Core Strategy, rather than the development specifically.

While the link capacity values do not suggest capacity issues on routes into Bristol and Keynsham in practice junctions will constrain highway capacity along these routes. The A37 and A4 into Bristol operate with congestion in 2012 and there is little scope for highway improvement.

Table 97: Volume/Capacity on Link, With-Development 2029

Highway/Area	AM Peak Hour				PM Peak Hour			
	NB	SB	EB	WB	NB	SB	EB	WB
A4 east of Callington Rd			59%	51%			57%	74%
A4 west of Callington Rd			52%	82%			68%	81%
A4174 Callington Rd	50%	53%			56%	60%		
A37 north of Callington Rd			60%	49%			82%	71%
A37 south of access	45%	67%			57%	76%		
Durley Hill			57%	73%			83%	59%
Bristol Road (Keynsham)			64%	73%			76%	61%
A4 West of Saltford			102%	112%			119%	73%
A4 Bath Rd to/from Bristol			35%	68%			44%	53%
A4174 Ring Road	37%	50%			37%	59%		

J1.4.5 Potential for Mitigation

An initial evaluation of highway infrastructure and transport services has been undertaken to identify potential measures and constraints along key highways.

- Junctions along the A4 and A37 are already managed as part of the coordinated, demand responsive signal control system operated by BCC. There is little scope for highway improvements and demand management measures are therefore required in the short-medium term.
- The Bristol Bus Rapid Transit Route from Hengrove to Filton via the City Centre could reduce help manage traffic volumes along the A37.
- A new Park and Ride facility on the A37 could intercept traffic destined for Bristol city centre reducing pressure on the A37 corridor. An initial study prepared by Mott MacDonald on behalf of B&NES reviewed potential demand for a P&R facility and a bypass in Whitchurch. This concluded that neither scheme had a strong business case on an individual basis but they could form part of a wider package. With regards to the P&R facility estimated transfer from the A37 was 450 vehicles per day, of which 170 would transfer from the existing Brislington P&R. The service would require a subsidy of £270,000 per annum.[43]
- The A4 through Saltford experiences congestion and relatively slow journey times in 2012. The highway width is constrained and there is little scope for capacity improvements within the existing corridor. Demand management/sustainable transport measures may provide the most cost effective means of managing the situation.
- Keynsham High Street is constrained and there is little scope for highway capacity improvements. Demand management measures should be considered.
- Junctions along routes into Keynsham and A4174 Ring Road (Charlton Road, St Ladoc Road) may require highway improvement works to provide additional capacity.

J1.5 Conclusions

Any development on land at Whitchurch is likely to result in a relatively high number of vehicular trips as a result of its isolated location. Furthermore the area exhibits relatively low levels of public transport use in comparison with other locations considered in this study and opportunities for walking are limited. The ward also has the lowest level of cycling of those considered in this study. There are a number of bus services operating in the vicinity of this location however the ward has the lowest bus mode share of those examined in this study suggesting that journey times or destinations are unattractive to commuters.

The majority vehicular trips arising from development are destined into Bristol with the A37 and A4 corridors experiencing significant peak hour congestion resulting in relatively low average speeds. Development is also likely to result in

[43] Additional study work was undertaken on the potential for Whitchurch P&R, reported in: Core Strategy: Transport Modelling Technical Note, B&NES Core Strategy Information Paper 4, Jan 2011.

increased traffic demands on the A4174 Callington Road which has congested junctions at the A37 and A4 and Charlton Road/St Ladoc Road which are primarily residential streets unsuited to significant increases in traffic. There is little scope to introduce mitigation measures through link/junction improvements along these corridors and development is likely to result in residual impacts.

Overall this location is located far from major employment areas in a ward which limits opportunities for modal shift to sustainable modes, despite reasonable bus services and connections to NCN3. Traffic impacts are primarily on routes into Bristol which are heavily congested with low journey speeds, or on residential streets in Keynsham. The development is likely to result in car dependant behaviour which will be difficult to mitigate through demand management or highway capacity improvements along existing corridors.