

Purbeck Modelling

Spatial Model Report

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1.0 INTRODUCTION

Background

- 1.1 Dorset County Council's Modelling Team were commissioned on 9 February 2016 to undertake an assessment of the impact of two proposed development options in the Purbeck District. The study area is shown in Figure 1.1.
- 1.2 The study area includes all the parishes in Purbeck District and some external zones that represent immediate surrounding areas such as Poole and Weymouth plus the A35 and A352 that allow people to get in and out of the Purbeck District via major link roads.

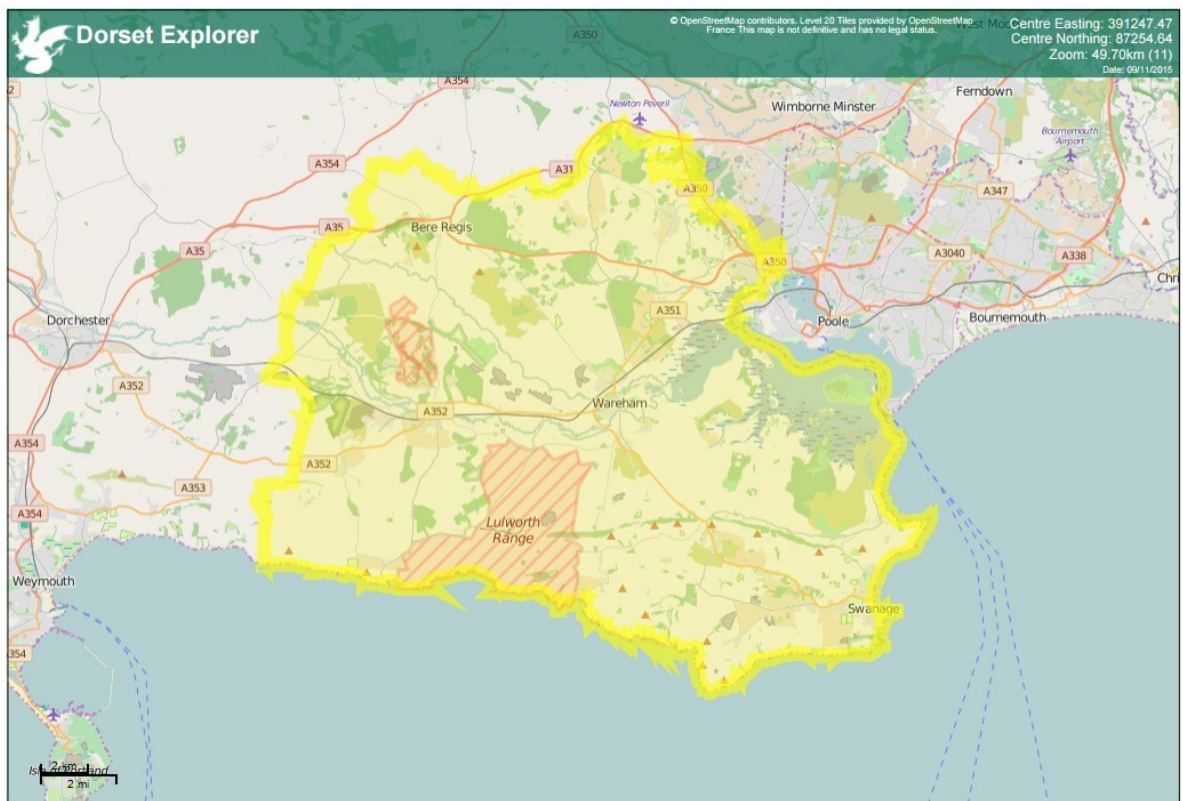


Figure 1.1 – Study Area

- 1.3 A number of options were considered for undertaking this study including using the Dorset Diamond Spreadsheet model, a simple model that represents traffic flows on the major roads in Dorset, or updating an existing SATURN assignment model, a more detailed model that includes delays at junctions. However, in view of the tight timescale and budget constraints a 'buffer' model was created using SATURN software, a simple model that includes traffic flow but has no detail on junctions or traffic signals. This is considered an appropriate level of information for this stage of the plan making process.

2.0 MODEL CREATION

Network

- 2.1 A basic traffic model was created with SATURN modelling software using data from Google maps and Dorset Explorer (buffer network). All major routes have been included. This network does not take account of individual junctions but gives an indication of where vehicles travel to and from. The buffer network reflects; link length, capacity and speed flow relationship. The extents of the model are shown in Figure 2.1.

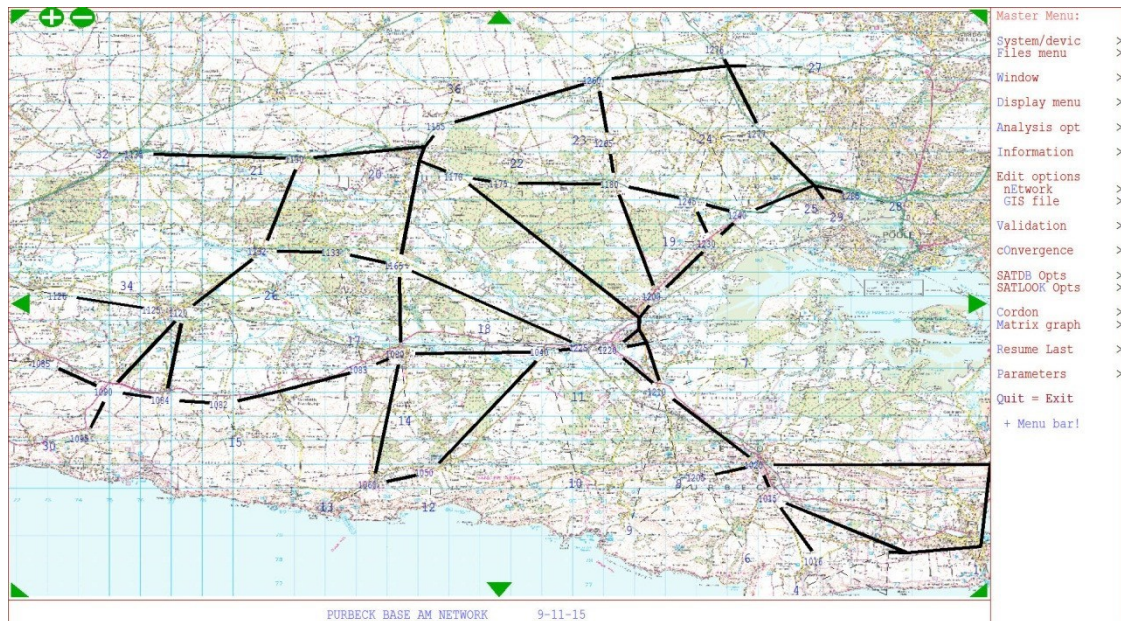


Figure 2.1 – SATURN Buffer Network

Demands

- 2.2 Trip distribution (where people travel to and from) was based on 'distance travelled to work' data from the 2011 Census. The road network in this model covers the 26 parishes within Purbeck. The 26 parishes are represented by Zones, which are listed in Table 3.2. An additional 10 zones around the perimeter of the model represent external links to and from the Purbeck District. These allow trips to travel to and from Purbeck. Traffic demands (how many vehicles are travelling) are based on historic traffic counts and some estimates of the number of vehicles entering and exiting each parish and external zone.
- 2.3 The traffic on the model represents an average AM peak hour (0800-0900).
- 2.4 The model represents all categories of vehicles. It does not take special account of heavy good vehicles or buses.

Validation

- 2.6 The traffic flows within the model have been validated (checked) against a number of independent traffic counts. The results are contained in Appendix A.
- 2.7 Overall, 80% of links (road sections) meet the Design Manual for Roads and Bridges (DMRB) criteria for model validation. This is below the DMRB guidance of 85%, however, it is still a reasonable representation of likely traffic flows. Figure 2.2 shows the differences between observed and modelled traffic flows. Green bandwidths show modelled traffic flow greater than observed. Blue shows modelled traffic flow lower than observed.

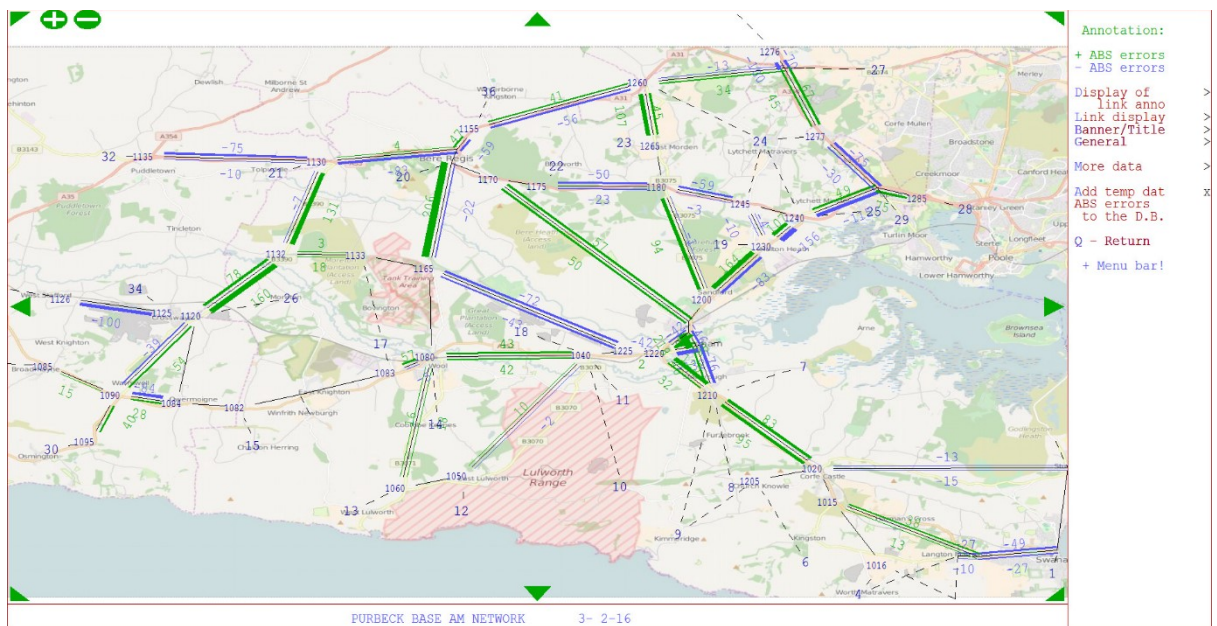


Figure 2.2 – Differences between Observed and Modelled Traffic Flow

- 2.8 Speeds along a number of routes have been compared with information from Google Maps. This data does not meet DMRB criteria but does allow individual routes to be compared on a like for like basis. Generally, modelled and Google time appear similar.

3.0 FORECAST MODEL

Background Growth to 2027 (Do Minimum)

3.1 The Purbeck Local Plan Part 1 (PLP1) plans for 2,520 dwellings up to 2027. Those yet to be built have been included in the spatial areas shown in Table 3.1. The Table shows the current rate of housing development within Purbeck from 2006-2015 and the number of dwellings still to be built up to 2027. These have been included in the forecast scenario.

Table 3.1 – Purbeck Growth 2015-2027

Spatial area	No. homes to deliver in PLP1	No. delivered 2006-2015	No. left to build
North west	120	39	81
North east	605	286	319
Central	475	135	340
South west	360	297	63
South east	960	398	562
Totals	2,520	1,155	1,365

3.2 Traffic growth for zones outside Purbeck District has been included in the model. Growth for these external zones has been based on figures generated for the South East Dorset Model. Although the growth factors from South East Dorset are for 2012-2026 they are likely to be similar to the 2015-27 growth estimates. A complete list of growth factors for origins (vehicles leaving a zone) and destinations (vehicles entering a zone) are shown in Table 3.2.

Zone	Description	Origins	Destinations
1	Swanage	1.069	1.023
2	Studland	1.556	1.116
3	Wareham Town	1.025	1.008
4	Worth Matravers	1.463	1.162
5	Langton Matravers	1.278	1.074
6	Corfe Castle	1.278	1.162
7	Arne	1.217	1.190
8	Church Knowle	1.938	1.269
9	Kimmeridge (no data)	2.403	1.854
10	Steeple (including Tynham)	1.651	1.289
11	East Holme (no data)	1.980	1.572
12	East Lulworth	1.062	1.030
13	West Lulworth	1.031	1.010
14	Coombe Keynes (no data)	1.153	1.093
15	Chaldon Herring	1.155	1.046
16	Winfrith Newburgh	1.052	1.018
17	Wool	1.008	1.002
18	East Stoke	1.651	1.073
19	Wareham St. Martin	1.056	1.007
20	Bere Regis	1.058	1.035
21	Affpuddle and Turnerspuddle	1.188	1.595
22	Bloxworth	1.312	1.601
23	Morden	1.335	1.176
24	Lytchett Matravers	1.078	1.027
25	Lytchett Minster and Upton	1.108	1.058
26	Moreton	1.062	4.209
27	A31 Henbury	1.192	1.226
28	A35 Upton Bypass	1.126	1.118
29	A350 Upton	1.103	1.068
30	A353 Poxwell	1.164	1.194
31	A352 Broadmayne	1.146	1.190
32	A35 Puddletown	1.146	1.190
33	A350 Spetisbury	1.142	1.207
34	Crossways	1.185	1.068
35	West Stafford	1.146	1.190
36	Winterbourne Kingston	1.142	1.207

Table 3.2 – Growth Factors to 2027 (“Do minimum”). These growth factors are calculated using the number of houses left to build per area of Purbeck (up to 2017) and the number of trip rates generated in each area according to the number of jobs and the number of houses (using information from 2011 Census). This will determine whether a zone is mainly an origin or a destination for journeys made during the AM peak.

- 3.3 These factors do not explicitly take account of the 500 homes planned at Crossways but does include overall growth 2012-2026 for West Dorset District. The factors do not take account of any potential minerals development as future growth is currently uncertain

Growth 2027 to 2033 (Do Minimum)

3.4 Further growth factors have been applied to the 2027 matrices to represent a ‘Do Minimum’ year of 2033. This has been carried out using TEMPRO data from the National Trip End Model.

Trip Rates

3.5 Trip rates have been calculated using the TRICS database. TRICS is the national standard system of trip generation (the number of trips generated by a proposed development).

3.6 Trip rates have been calculated for two scenarios. The first has been based on a previous report for development in the Wool area because this development is included in most of the scenarios tested. The second scenario is based on more remote sites (these have higher trip rates as people need to drive to obtain services).

3.7 Table 3.3 below shows the estimated trips from 1000 dwellings – **for the Wool scenario** – taken from TRICS output.

**Estimated TRIP rate value per 1000 DWELLS shown in shaded columns
BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS				DEPARTURES				TOTALS			
	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate
00:00 - 01:00												
01:00 - 02:00												
02:00 - 03:00												
03:00 - 04:00												
04:00 - 05:00												
05:00 - 06:00												
06:00 - 07:00												
07:00 - 08:00	3	95	0.050	50.441	3	95	0.320	330.161	3	95	0.398	398.602
08:00 - 09:00	3	95	0.101	101.399	3	95	0.346	346.154	3	95	0.447	447.553
09:00 - 10:00	3	95	0.101	101.399	3	95	0.199	199.301	3	95	0.300	300.700
10:00 - 11:00	3	95	0.147	146.853	3	95	0.136	136.364	3	95	0.283	283.217
11:00 - 12:00	3	95	0.213	213.287	3	95	0.161	160.839	3	95	0.374	374.126
12:00 - 13:00	3	95	0.126	125.874	3	95	0.178	178.322	3	95	0.304	304.196
13:00 - 14:00	3	95	0.133	132.867	3	95	0.136	136.364	3	95	0.269	269.231
14:00 - 15:00	3	95	0.168	167.832	3	95	0.199	199.301	3	95	0.367	367.133
15:00 - 16:00	3	95	0.294	293.706	3	95	0.161	160.839	3	95	0.455	454.545
16:00 - 17:00	3	95	0.259	258.741	3	95	0.140	139.860	3	95	0.399	398.601
17:00 - 18:00	3	95	0.353	353.147	3	95	0.196	195.804	3	95	0.549	548.951
18:00 - 19:00	3	95	0.346	346.154	3	95	0.143	143.357	3	95	0.489	489.511
19:00 - 20:00												
20:00 - 21:00												
21:00 - 22:00												
22:00 - 23:00												
23:00 - 24:00												
Total Rates:			2.300	2300.700			2.334	2335.666			4.634	4636.366

Table 3.3: TRICS data – 1000 dwellings (Wool area). N.B: No. of days (3) column refers to the number of surveys available with suitable data (excluding weekends, public holidays etc...), and Average Dwellings column (95) refers to the number of houses on the development of a similar type, size and location to the Wool site (according to TRICS best practice this was the nearest match).

3.8 This table shows that the busiest times on the network will be between 08:00 – 09:00 and 17:00 – 18:00 (morning and evening peaks). The TRICS data is taken from the national database for new housing development of a similar size and type and in a similar location to the proposed allocation in Wool. The calculations are based on TRICS good practice and uses the best data available at the time.

4.0 SCENARIO TESTING

Scenarios

4.1 Two housing scenarios have been tested as follows:

- **Option A** – Maximise housing in south west Purbeck

Settlement	Number of homes
Upton	100
Wareham	705
Lytchett Matravers	110
Wool	1,000
Langton Matravers	40
Harmans Cross	20
Lytchett Minster	650
Moreton Station	600
	3,225

- **Option B** – edge of conurbation focus

Settlement	Number of homes
Upton	100
Lytchett Minster	650
Lytchett Matravers	625
Wareham	705
Wool	1,000
	3,080

4.2 The number of trips generated by each development, and growth factors for departures and arrivals per zone are shown in Table 4.1 and Table 4.2 for Option A and option B respectively.

Scenario	Location	Dwellings	Zone	Predicted Departures	Predicted Arrivals
OPTA	Upton	100	29	35	10
OPTA	Wareham	705	3	244	71
OPTA	Lytchett Matravers	110	24	38	11
OPTA	Wool	1000	17	346	101
OPTA	Langton Matravers	40	5	14	4
OPTA	Harmans Cross	20	6	7	2
OPTA	Lytchett Minster	650	25	225	66
OPTA	Moreton Station	600	26	208	61
	TOTAL	3225		1116	326

Table 4.1 – Option A

Scenario	Location	Dwellings	Zone	Predicted Departures	Predicted Arrivals
OPTB	Upton	100	29	35	10
OPTB	Lytchett Minster	650	25	225	66
OPTB	Lytchett Matravers	625	24	216	63
OPTB	Wareham	705	3	244	71
OPTB	Wool	1000	17	346	101
	TOTAL	3080		900	263

Table 4.2 – Option B

5.0 RESULTS

Overview

5.1 The forecast scenarios were run and results compared with the 2033 'Do Minimum' scenario – this is the highway network as it is now with growth and developments added up to 2027 (as per the PLP1) plus five additional years of background growth to bring the model up to 2033. Difference plots have been produced for each test. Green bandwidths show predicted increases in traffic and blue bandwidths show predicted decreases in traffic. A tabulated set of these results are contained in Appendix B (forecast flows highlighted in pink are greater than the maximum recorded observed flow).

Option A

5.2 This scenario focuses on maximising housing in south west Purbeck and includes the following housing: 100 at Upton, 705 at Wareham, 110 at Lytchett Minster, 1000 at Wool, 40 at Langton Matravers, 20 at Harmans Cross, 650 at Lytchett Minster and 600 near Moreton Station.

5.3 The difference plot in Figure 5.1 shows predicted increases in traffic are generally to the northern area of the network. There are significant (more than 100 vehicles per hour) increases on the Upton Bypass, the A35 between B3075 Morden and Bakers Arms roundabout, the B3390 north of Crossways and the A35 Bere Regis Bypass. There is also a significant increase in traffic on the A351 just north of Wareham (This will alter depending on the location of the proposed Wareham development). The bypasses should easily accommodate the additional traffic. However, the A35 west of Bakers Arms and the B3390 may experience greater congestion compared with current conditions.

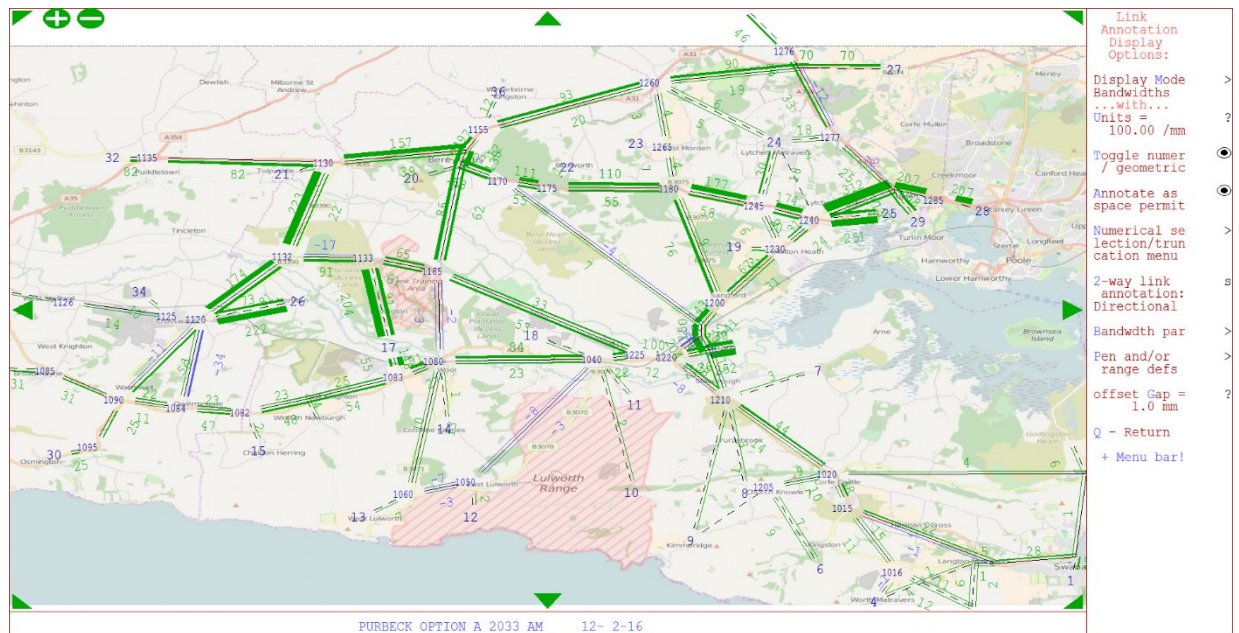


Figure 5.1 – Option A compared with Do Minimum 2033

Option B

- 5.4 This scenario is focused on the edge of the conurbation plus a large development at Wool and includes the following housing: 100 at Upton, 650 at Lytchett Minster, 625 at Lytchett Matravers, 705 at Wareham and 1000 at Wool.
- 5.5 The difference plot in Figure 5.2 shows predicted increases in traffic are spread fairly evenly across the network. There are significant (more than 100 vehicles per hour) increases on the Upton Bypass, the A35 between B3075 Morden and Bakers Arms roundabout, on the C6 south of Bere Regis and on the A351 just north of Wareham. (The A351 traffic will alter depending on the location of the proposed Wareham development). Because of congestion at Bakers Arms, some traffic is using the B3075 to travel from Wareham to Poole and Wareham to the A31.

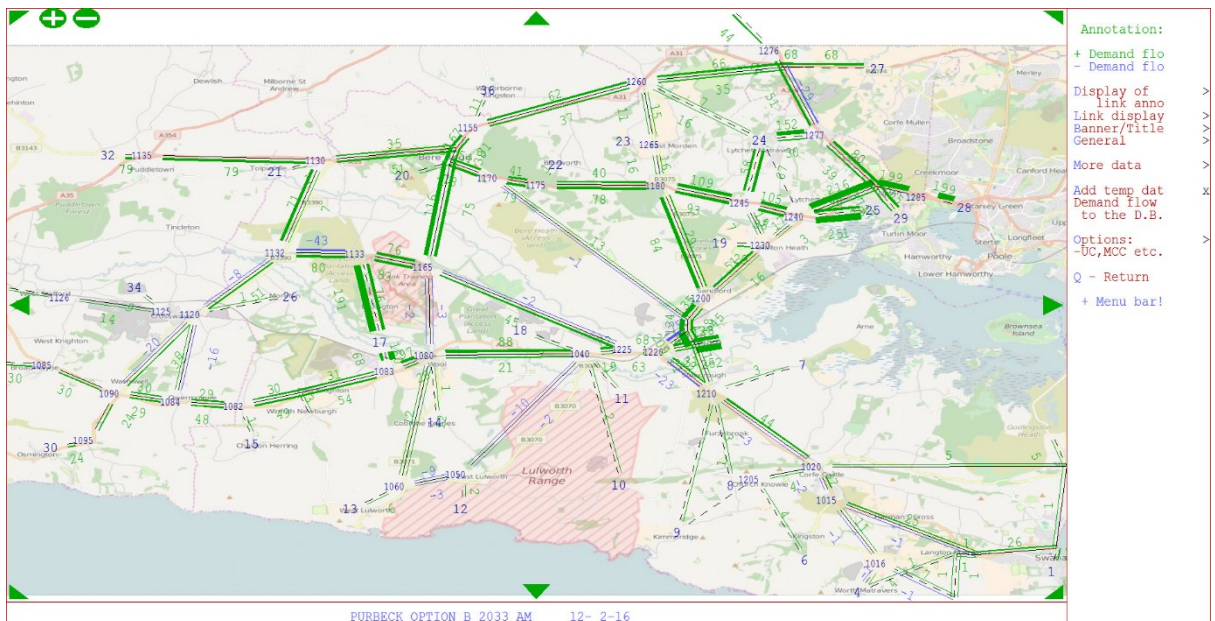


Figure 5.2 – Option B compared with Do Minimum 2033

Model Summary Statistics

- 5.6 The SATURN model produces a number of summary statistics relating to average speed, time travelled, distance travelled and distance queued. This data provides an indication of how the network is performing overall.
- 5.7 Statistics from the Base, Do Minimum and both scenario options are presented in Table 5.1.

Matrix Name	Total number of trips in the matrix	Total Travel Time (PCU.HRS)	Total Travel Distance (PCU.KMS)	Average Speed (PCU.HRS)	Average Distance per trip	Average Time per trip
BaseAM	9913.9	1002.9	70716	70.5	7.132943	0.10116
DM2033A	11344.22	1241.4	82343.7	66.3	7.258661	0.10943
OPTA_2033A	12527.1	1444.5	89527.4	62	7.146755	0.115311
OPTB_2033A	12471.6	1408.1	88046.3	62.5	7.059744	0.112905

Table 5.1 – Model Summary Statistics

- 5.8 The colour scales in Table 5.1 show the base model to be the least congested with the fastest travel times and shortest distance travelled (highlighted in green).
- 5.9 Option B appears to be the less congested of the two options with the shortest distance driven per trip (highlighted in green). The shorter distances could provide better opportunities for more journeys made by walking and cycling and fewer by car.
- 5.10 Option A is the most congested of the two options.

6.0 CONCLUSIONS

6.1 The buffer model provides a reasonable reflection of current 2015 morning peak.

6.2 The results of the scenario tests highlight some significant increases in traffic flows on a number of links. In many cases these are:

- B3390 northbound between Crossways and the A35
- A351 Northbound just north of Wareham (dependent on location of development)
- C6 northbound on its approach to Bere Regis
- A35 Between Morden Park Corner and the Upton Bypass

6.3 The summary statistics shows:

- Option A (maximise development in south west Purbeck) is the most congested. The increase in traffic is generally in the northern area of the network. The most significant increases in congestion are likely to occur on the A35 west of Bakers Arms roundabout and on the B3390.
- Option B (focus on the edge of the conurbation and at Wool) is the least congested. Increases in traffic appear to be spread more evenly across the network. Option B also has the shortest distance travelled per trip, as the housing is located closer to the employment and services.

6.4 Based upon this modelling exercise, Option B (with a focus on the edge of the conurbation and at Wool) appears to be the least congested and has the shortest distance travelled per trip, which could provide better opportunities for more journeys made by walking and cycling, bus and fewer by car.

ADDENDUM

DCC Transport Planning Briefing Note

Public consultation on the Purbeck Local Plan Partial Review Issues and Options in January 2015 emphasised the importance to continue close liaison with DCC Highways to ensure that development would not lead to unacceptable impacts on local highways. As the plan review progresses, DCC has undertaken 'traffic modelling' to test the potential impacts of developing specific sites based upon two scenarios.

It should be noted that these are high level comments based on the outcomes from the Purbeck Traffic Modelling Report (2016) and the principles of sustainable development and severe impact testing are not based on a detailed transport assessment of individual proposals at this stage.

Key findings:

Option A: This option maximises housing in south west Purbeck.

This scenario includes housing at the following locations: Upton, Wareham, Lytchett Matravers, Wool, Langton Matravers, Harman's Cross, Lytchett Minster and Moreton.

The traffic forecasting for this option shows that this is the most congested scenario with predicted increases in traffic generally to the northern part of the network, mostly on the main links into the conurbation to access services, facilities and employment. This option also has a larger proportion of shorter trip lengths compared to Option B suggesting that people will travel to their local town/village centre to access available services and facilities, rather than travelling the further distance into the Poole/Bournemouth conurbation.

Although this model forecasts a general increase in traffic levels, it is expected that future development focused in Wool, Wareham and Moreton, being in close proximity to their respective train stations, would encourage more journeys to be made by train (with link journeys made by walking, cycling and bus) to the main centres of Dorchester/Weymouth and Poole/Bournemouth. It is forecast that future development will not have a severe impact on the highway network.

Option B: This option focuses on edge of conurbation development.

This scenario includes housing at the following locations: Upton, Lytchett Minster, Lytchett Matravers, Wareham and Wool.

The traffic forecasting for this option shows that this is the least congested scenario, with a general increase in traffic spread fairly evenly across the network. Option B also has the shortest distance travelled per trip, due to housing being located closer to local services, facilities and employment within the conurbation. The shorter trip lengths provide opportunities for more journeys to be made by walking, cycling and public transport and fewer car-based journeys. However Option B has a lower number of shortest distance trips travelled compared to Option A. It is forecast that future development will not have a severe impact on the highway network.

Previous public consultation showed that there is a common belief that traffic congestion is a major problem in Purbeck (especially along the A351), and general public consensus that there should be no further development to the south of the district. Instead development should be focused to the north of the district, along and around the A35. The modelling results would suggest that Option B (focusing on edge of conurbation development) is the more sustainable scenario in terms of future development.

When the brief for this traffic model was issued (autumn 2015), it was decided by Purbeck District Council and Dorset County Council that the most sensible approach was to model the two scenarios as outlined at the time, these being two extreme options for future housing development. Since then, Purbeck District Council has continued to move towards a Preferred Option which is considered to be the “middle ground” between the two scenarios tested and has therefore not been modelled at this stage. The modelling undertaken to date demonstrates that the two scenarios tested will not have a severe impact on the highway network. As the Preferred Option is sitting in the middle of these two scenarios, we conclude that the preferred option is therefore acceptable on severe impact grounds.

The Council is aware that impacts on local infrastructure need to be mitigated. Where there is a negative impact on the network, the developer will be required to initiate mitigation measures such as improving walking, cycling and public transport links to and from the development site in order for it to be acceptable in sustainable development terms.

The Options:

Option A (tested): This scenario focuses on maximising housing in south west Purbeck and includes the following housing:

Upton 100
Wareham 705
Lytchett Matravers 110
Wool 1000
Langton Matravers 40
Harmans Cross 20
Lytchett Minster 650
Moreton 600
Total 3,225

Option B (tested): This scenario is focused on the edge of the conurbation plus a large development at Wool and includes the following housing:

Upton 100
Lytchett Minster 650
Lytchett Matravers 625
Wareham 705
Wool 1000
Total 3,080

Preferred Option (not tested): This scenario is a new infrastructure-led approach, with a focus on sustainable locations, wherever possible. Development in the following locations:

Upton 100
Wareham Town 500
North Wareham 205

Lytchett Minster 650
Wool 1,000
Langton Matravers 40
Harmans Cross 20
Lytchett Matravers 330
Moreton 350
Total 3,195

Severe Impact Test (for information)

Paragraph 32 of the NPPF: ***“Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.”***

The test should be approached as follows:

1. Identify the current position;
2. Add expected traffic/travel growth, including increases expected from development with planning permission but not yet build or occupied;
3. Add the anticipated growth from the application site;
4. Look at all highway improvement schemes proposed by the development, other development or HA schemes;
5. Expected travel conditions can then be assessed for the design year to see if the residual effect would be severely adverse.

To sum up, it's not just the development, both in terms of impact and mitigation that should be considered; but the entire picture.

APPENDIX A

Model Validation Results

Road	Location	Dir.	No.	Start	End	A Node	B Node	Obs.	Modelled	Diff (%)	Diff (Abs)	GEH
A31	East of Bere Regis	EB	2362	06/10/2014	19/10/2014	1150	1155	610	657.2	7.2%	44	1.75
A31	East of Bere Regis	WB	2362	06/10/2014	19/10/2014	1155	1150	730	670.5	-8.7%	-64	2.40
A31	Winterborne Zelston	EB	2196	22/06/2009	28/06/2009	1155	1260	510	550.7	7.1%	37	1.59
A31	Winterborne Zelston	WB	2196	22/06/2009	28/06/2009	1260	1155	610	554	-9.6%	-59	2.44
A31	West of A350	EB	2362	03/10/2011	23/10/2011	1260	1270	690	676.8	-1.9%	-13	0.50
A31	West of A350	WB	2362	03/10/2011	23/10/2011	1270	1260	610	643.65	6.0%	37	1.47
A35	E of A354 Northbrook	EB	2464	15/09/2014	28/09/2014	1135	1130	1060	985.1	-7.4%	-79	2.46
A35	E of A354 Northbrook	WB	2464	15/09/2014	28/09/2014	1130	1135	930	919.7	-1.1%	-10	0.34
A35	Rogers Hill Farm	EB	2005	15/09/2014	28/09/2014	1130	1150	1020	1023.7	0.8%	8	0.24
A35	Rogers Hill Farm	WB	2005	15/09/2014	28/09/2014	1150	1130	1090	1006.7	-7.5%	-81	2.51
A35	Woodlake	EB	347	06/10/2014	19/10/2014	1175	1180	730	678.97	-6.9%	-50	1.89
A35	Woodlake	WB	347	06/10/2014	19/10/2014	1180	1175	590	568.1	-3.2%	-19	0.79
A35	Upton Bypass West	EB	23	06/10/2014	19/10/2014	1240	1280	1680	1729.1	2.7%	46	1.12
A35	Upton Bypass West	WB	23	06/10/2014	19/10/2014	1280	1240	1480	1365.15	-8.0%	-119	3.15
A35	East of B3075	EB	1960	07/04/2008	27/04/2008	1180	1245	840	780.42	-6.9%	-58	2.02
A35	East of B3075	WB	1960	07/04/2008	27/04/2008	1245	1180	610	607.8	0.0%	0	0.01
A350	Coombe Almer	NB	361	02/06/2015	15/06/2015	1277	1270	430	474.9	9.7%	42	1.97
A350	Coombe Almer	SB	361	02/06/2015	15/06/2015	1270	1277	670	737.95	10.0%	67	2.52
A350	N of A35	NB	6959	05/04/2011	05/04/2011	1280	1277	580	549.9	-5.2%	-30	1.27
A350	N of A35	SB	6959	05/04/2011	05/04/2011	1277	1280	1050	975.65	-6.6%	-69	2.18
A351	South of Bakers Arms	NB	22	06/10/2014	19/10/2014	1230	1240	830	937.41	12.5%	104	3.51
A351	South of Bakers Arms	SB	22	06/10/2014	19/10/2014	1240	1230	910	753.65	-17.3%	-157	5.45
A351	Sandford Rd Sandford	NB	1849	15/03/2010	21/03/2010	1200	1230	700	863.58	24.3%	169	6.04
A351	Sandford Rd Sandford	SB	1849	15/03/2010	21/03/2010	1230	1200	720	635.85	-11.7%	-84	3.23
A351	River Piddle Bridge	EB	616	07/07/2014	20/10/2014	1220	1035	590	548.33	-7.1%	-42	1.75
A351	River Piddle Bridge	WB	616	07/07/2014	20/10/2014	1035	1220	620	717	15.1%	94	3.63
A351	Wareham Bypass (South)	NB	J06077	12/10/2006	12/10/2006	1210	1220	470	501.5	7.4%	35	1.57
A351	Wareham Bypass (South)	SB	J06077	12/10/2006	12/10/2006	1220	1210	370	494.9	34.9%	128	6.16
A351	Stoborough	NB	15	06/10/2014	19/10/2014	1020	1210	460	554.8	21.1%	97	4.30
A351	Stoborough	SB	15	06/10/2014	19/10/2014	1210	1020	400	482.6	20.3%	82	3.88
A351	Harmans Cross	EB	359	07/07/2014	13/07/2014	1015	1011	280	317.6	12.6%	36	2.06
A351	Harmans Cross	WB	359	07/07/2014	13/07/2014	1011	1015	340	353.2	3.9%	13	0.71
A352	Owermoigne	EB	10	06/10/2014	19/10/2014	1090	1084	510	425.7	-15.9%	-80	3.72
A352	Owermoigne	WB	10	06/10/2014	19/10/2014	1084	1090	300	326.1	7.3%	22	1.25
A352	Wareham Road East Stoke	EB	1848	17/09/2012	07/10/2012	1080	1040	310	353.1	12.8%	40	2.20
A352	Wareham Road East Stoke	WB	1848	17/09/2012	07/10/2012	1040	1080	310	350.1	14.8%	45	2.49
A352	Worgret West of Wareham	EB	357	06/10/2014	19/10/2014	1225	1220	500	457.63	-8.8%	-44	2.03
A352	Worget West of Wareham	WB	357	06/10/2014	19/10/2014	1220	1225	420	420.8	0.0%	0	0.01
B3070	Worgret Road, Wareham	EB	2726	07/11/2012	13/11/2012	1220	1030	240	279.8	19.1%	45	2.79
B3070	Worgret Road, Wareham	WB	2726	07/11/2012	13/11/2012	1030	1220	200	67.7	-66.2%	-132	11.44
B3070	Worgret Rd Wareham	EB	2297	15/04/2008	21/04/2008	1220	1030	240	279.8	16.6%	40	2.47
B3070	Worgret Rd Wareham	WB	2297	15/04/2008	21/04/2008	1030	1220	160	67.7	-56.3%	-87	8.27
B3075	Winterborne Zelston	NB	2237	06/09/2006	12/09/2006	1265	1260	50	157.4	242.2%	111	11.05
B3075	Winterborne Zelston	SB	2237	06/09/2006	12/09/2006	1260	1265	70	114.35	61.1%	43	4.50
B3075	North Street Wareham	NB	1079	07/07/2013	20/10/2013	1030	1035	450	668.6	48.2%	218	9.20
B3075	North Street Wareham	SB	1079	07/07/2013	20/10/2013	1035	1030	310	264.2	-13.7%	-42	2.48
B3075	Corfe Road, Stoborough	NB	2768	07/10/2013	20/10/2013	1210	1030	120	166.3	40.9%	48	4.05
B3075	Corfe Road, Stoborough	SB	2768	07/10/2013	20/10/2013	1030	1210	110	33.7	-69.1%	-75	8.91
B3075	Sherford South of A35	NB	1184	12/09/2011	18/09/2011	1200	1180	90	183.85	102.0%	93	7.92
B3075	Sherford South of A35	SB	1184	12/09/2011	18/09/2011	1180	1200	140	138.85	0.6%	1	0.07
B3351	Rempstone	EB	353	07/07/2014	13/07/2014	1020	1000	70	57.4	-19.2%	-14	1.70
B3351	Rempstone	WB	353	07/07/2014	13/07/2014	1000	1020	50	34.7	-34.5%	-18	2.76
B3390	Crossways	NB	355	06/10/2014	12/10/2014	1120	1132	230	307.4	35.4%	80	4.92
B3390	Crossways	SB	355	06/10/2014	12/10/2014	1132	1120	150	312.1	113.8%	166	10.97
B3390	S of Crossways	NB	2137	15/04/2005	21/04/2005	1090	1120	210	171.9	-19.7%	-42	3.03
B3390	S of Crossways	SB	2137	15/04/2005	21/04/2005	1120	1090	160	216.7	36.3%	58	4.21
C6	Gallows Hill Picnic Area	NB	360	07/07/2014	27/07/2014	1165	1160	200	405.77	106.0%	209	12.03
C6	Gallows Hill Picnic Area	SB	360	07/07/2014	27/07/2014	1160	1165	320	298.5	-7.0%	-23	1.28
C7	South of C79 Crossroads	NB	1393	17/05/2010	30/05/2010	1190	1170	120	169.5	43.6%	52	4.30
C7	South of C79 Crossroads	SB	1393	17/05/2010	30/05/2010	1170	1190	150	206.5	41.4%	61	4.56
C27	Vineyard Bridge Vineyard	EB	2636	26/09/2011	02/10/2011	1205	1020	30	100.7	196.2%	67	8.13
C27	Bridge Puddletown Road	WB	2636	26/09/2011	02/10/2011	1020	1205	30	48.1	78.1%	21	3.44
C80	Worgret Puddletown Road	EB	2097	22/10/2007	28/10/2007	1165	1225	100	28.47	-70.0%	-67	8.47
C80	Worgret East of Waddock	WB	2097	22/10/2007	28/10/2007	1225	1165	80	36.9	-52.7%	-41	5.42
C80	Cross East of Waddock	EB	1394	17/05/2010	23/05/2010	1132	1133	230	232.6	-0.2%	0	0.03
C80	Cross	WB	1394	17/05/2010	23/05/2010	1133	1132	130	149.1	13.0%	17	1.44
C80	N of Waddock Cross N of	NB	966278	22/04/2009	22/04/2009	1132	1130	130	122.9	-4.0%	-5	0.46
C80	Waddock Cross Kingston	SB	966278	22/04/2009	22/04/2009	1130	1132	80	211.1	181.5%	136	11.38
u/c	Road. Kingston Kingston	EB	947047	18/05/2012	18/05/2012	1012	1011	60	33.3	-39.5%	-22	3.27
u/c	Road. Kingston West	WB	947047	18/05/2012	18/05/2012	1011	1012	50	40.1	-10.9%	-5	0.75
u/c	Holme, East Lulworth West	EB	947039	09/07/2012	09/07/2012	1050	1040	50	60.16	22.8%	11	1.51
u/c	Holme, East Lulworth	WB	947039	09/07/2012	09/07/2012	1040	1050	30	28.2	-14.5%	-5	0.87
u/c	Lulworth Road, Wool	NB	947039	14/09/2009	14/09/2009	1060	1080	60	75.54	30.2%	18	2.15
u/c	Lulworth Road, Wool	SB	947039	14/09/2009	14/09/2009	1080	1060	60	77.8	31.9%	19	2.27

APPENDIX B

Model Forecast Results

Traffic Counts vs Forecast Flows in Purbeck Area (AM Peak)

Road	Location	Dir.	No.	Ave.Obs.	Max Obs	DM	OPTA	OPTB
A31	East of Bere Regis	EB	2362	610	1034	808	926	897
A31	East of Bere Regis	WB	2362	730	1030	796	836	854
A31	Winterborne Zelston	EB	2196	510	900	678	788	757
A31	Winterborne Zelston	WB	2196	610	904	665	711	728
A31	West of A350	EB	2362	690	1034	843	957	933
A31	West of A350	WB	2362	610	1030	765	823	839
A35	E of A354 Northbrook	EB	2464	1060	1214	1129	1147	1147
A35	E of A354 Northbrook	WB	2464	930	1254	1116	1231	1227
A35	Rogers Hill Farm	EB	2005	1020	1395	1189	1365	1242
A35	Rogers Hill Farm	WB	2005	1090	1346	1229	1305	1317
A35	Woodlake	EB	347	730	967	763	872	802
A35	Woodlake	WB	347	590	894	655	713	736
A35	Upton Bypass West	EB	23	1680	1984	1957	2272	2175
A35	Upton Bypass West	WB	23	1480	1878	1494	1523	1505
A35	East of B3075	EB	1960	840	937	925	1106	1039
A35	East of B3075	WB	1960	610	1167	697	756	791
A350	Coombe Almer	NB	361	430	668	581	622	640
A350	Coombe Almer	SB	361	670	922	839	826	808
A350	N of A35	NB	6959	580	668	648	678	691
A350	N of A35	SB	6959	1050	922	1096	1091	1173
A351	South of Bakers Arms	NB	22	830	1121	1015	1046	1031
A351	South of Bakers Arms	SB	22	910	1024	796	805	784
A351	Sandford Rd Sandford	NB	1849	700	1040	923	988	972
A351	Sandford Rd Sandford	SB	1849	720	1016	670	688	673
A351	River Piddle Bridge	EB	616	590	903	662	549	528
A351	River Piddle Bridge	WB	616	620	955	759	753	765
A351	Wareham Bypass (South)	NB	J06077	470	766	656	656	641
A351	Wareham Bypass (South)	SB	J06077	370	607	524	561	562
A351	Stoborough	NB	15	460	955	661	681	665
A351	Stoborough	SB	15	400	1005	499	542	543
A351	Harmans Cross	EB	359	280	531	321	343	346
A351	Harmans Cross	WB	359	340	524	378	381	381
A352	Owermoigne	EB	10	510	699	464	488	496
A352	Owermoigne	WB	10	300	851	417	431	449
A352	Wareham Road East Stoke	EB	1848	310	531	368	453	457
A352	Wareham Road East Stoke	WB	1848	310	598	399	427	425
A352	Worgret West of Wareham	EB	357	500	888	522	633	601
A352	Worget West of Wareham	WB	357	420	803	526	673	663
B3070	Worgret Road, Wareham	EB	2726	240	460	293	364	354
B3070	Worgret Road, Wareham	WB	2726	200	252	68	105	100
B3070	Worgret Rd Wareham	EB	2297	240	460	293	364	354
B3070	Worgret Rd Wareham	WB	2297	160	252	68	105	100
B3075	Winterborne Zelston	NB	2237	50	281	198	208	216
B3075	Winterborne Zelston	SB	2237	70	192	128	146	156
B3075	North Street Wareham	NB	1079	450	1085	687	896	901
B3075	North Street Wareham	SB	1079	310	543	261	298	306
B3075	Corfe Road, Stoborough	NB	2768	120	334	178	200	199
B3075	Corfe Road, Stoborough	SB	2768	110	405	34	47	47
B3075	Sherford South of A35	NB	1184	90	546	259	347	354
B3075	Sherford South of A35	SB	1184	140	305	153	175	195
B3351	Rempstone	EB	353	70	460	66	70	70
B3351	Rempstone	WB	353	50	376	56	56	56
B3390	Crossways	NB	355	230	388	363	539	357
B3390	Crossways	SB	355	150	523	383	473	443
B3390	S of Crossways	NB	2137	210	388	215	207	199
B3390	S of Crossways	SB	2137	160	523	235	304	282
C6	Gallows Hill Picnic Area	NB	360	200	731	516	671	701
C6	Gallows Hill Picnic Area	SB	360	320	524	345	413	426
C7	South of C79 Crossroads	NB	1393	120	421	166	111	102
C7	South of C79 Crossroads	SB	1393	150	270	197	187	204
C27	Vineyard Bridge	EB	2636	30	140	130	139	131
C27	Vineyard Bridge	WB	2636	30	143	54	60	58
C80	Puddletown Road Worgret	EB	2097	100	165	48	85	51
C80	Puddletown Road Worgret	WB	2097	80	212	104	227	219

C80	East of Waddock Cross	EB	1394	230	294	262	244	218
C80	East of Waddock Cross	WB	1394	130	367	182	275	264

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APPENDIX C
DCC comments on
large sites

DCC Transport Development Management
High Level Comments on Potential Development Sites
for Purbeck Local Plan Review Sep 2014

These initial, high level comments are based on the principle of the location of development with reference to initial transport assessments of individual proposals were submitted.

All large sites would require improvements.

Lytchett Minster

No objections in principle subject to mitigation measures as described below:

The Transport Appraisal has identified that capacity improvements will be required at the Baker's Arms roundabout East and West approach at least would need improvement possibly, including the east arm being signalised and these are deliverable within the existing highway extents.

The following areas of concern may also require mitigation measures:

- Traffic impact through Lytchett Minster and Upton
- A35 and A351 traffic impact
- Pedestrian / cycle access into Upton over the bypass (Watery Lane link)
- Cycle improvements along Dorchester Road
- Huntick Road / Randalls Hill junction very poor visibility
- Access arrangements for the individual sites proposed
- Changing the nature of the rural lanes in the area

Lytchett Minster is in reasonable proximity of Poole, with access to jobs and services. There is potential for public transport, cycle and walking.

Moreton Station / Redbridge Pit area

No objections subject to mitigation measures identified in the High Level Transport Statement as described below:

The site is very well located for encouraging the uptake of sustainable travel, being within a reasonable walking distance of Crossway's village, and the facilities therein, and significant public transport options, including Moreton Rail Station. A package of sustainable transport measures, including offsite pedestrian crossing/s of the B3390 Station Road, would facilitate movement to and from these key locations to the north west and south west via the existing footway along the northbound carriageway of Station Road.

The development could result in the need for design changes at the Fiveways junction, although it is anticipated that this issue might alternatively be mitigated through site layout design with restrictions built into the street network to limit the extent of through traffic movements."

The following sites could be more problematic in transport terms and their impacts on Purbeck's transport network (particularly the A351 and Wool level crossing) will need careful assessment with appropriate mitigation measures identified:

Worgret Manor Farm, Wareham

Initially the County Highway Authority had concerns over this location given that it lies on the "outside"

of the Wareham by-pass which makes it appear remote and raises concerns relating to severance. However, it should be noted that it is a similar distance from the town centre as the North Wareham site and appreciably closer to some schools, Particularly Purbeck School.

It is acknowledged that the overall pedestrian provision across the A351 at the roundabout is currently poor and would, without improvement to pedestrian facilities, present a significant barrier to trips being made to and from the proposed development.

The submitted Transport Strategy has identified that capacity improvements may be required at the Baker's Arms roundabout East and West approach at least would need improvement possibly, including the east arm being signalised and these are deliverable within the existing highway extents.

However the County Highway Authority considers that the proposals in the Transport Assessment could significantly reduce these issues to an acceptable level and it therefore has no objections in principle subject to mitigation measures as described below:

The areas of concern may require mitigation measures are:

- Impact on the A351, particularly at The Bakers Arms Roundabout.
- The formation of safe routes for cyclists and pedestrians across the bypass and along Worgret to the town centre facilities and schools.
- Assistance with proposed cycle and pedestrian route improvements along the A351 to the railway station.
- The developers need to contact Network Rail regarding the proposed creation of a branch line halt and bridges over their railway line and Swanage Railway regarding the possibility of serving the halt.

North Wareham

Subject to suitable mitigation this site offers reasonable opportunities with the exception of two significant concerns which need to be addressed and are due to the distance from schools and the potential need for safe easy crossing for all of the railway line and the by-pass link with the town centre and schools. These shouldn't be insurmountable but can be expected to have significant cost implications. The following points should also be noted:

- The T.A. considers impact on the A351 is acceptable.
- Footway and cycling links needed along Bere Road to existing network and rail station
- New 30mph gateway to Wareham to slow traffic from new urban edge created by new frontage development
- Carey's Road should have limited development fronting on to it due to the narrow width of the road and the lack of continuous footway provision.
- Footway and cycleway links to the town centre and schools need providing/improving especially if the pedestrian level crossing of railway is closed without ramps being installed to the footbridge. Discussions are on-going on options for this. Public consultation planned.

Sandford

Whilst the site has good development potential and is located close to Wareham with cycle and pedestrian connections along the route already; connections from the A351 to the site need provision or mitigation as below:

- Improved walking and cycling links needed from proposed site to A351 and Sandford facilities
- Improved walking and cycling links needed from proposed site to Holton Heath Industrial Estate using Rights of Way network

Wool

1000 dwellings

The matter of additional queuing at the level crossing arising from the promotion of 1,000 homes was the only outstanding area of concern in transport terms. Estimates of increases in queue length have been provided by i-Transport and checked by DCC Transport Modelling and considered to be acceptable and not to cause severe impact. Development would help support employment at Dorset Green and could support other services locally. A mix of uses could improve sustainability.

Previous comments which are still relevant included:

No objections in principle subject to strategic planning and mitigation measures.

- Significant development here will require strategic planning
- Wool level crossing is a traffic constraint due to its limited capacity
- Wool bypass issues with non-deliverability (Environment Agency objections) and significant cost, scheme not contained in LTP or LP1
- Online bridging over existing level crossing? Significant cost.
- Developers need to consult Network Rail - move Wool station westwards? Discussions ongoing between DCC NR to see if this would be an option
- Impact of traffic on A31 Bere Regis, developers need to consult Highways England