

Impact on Traffic in Abingdon

of the Vale of the White Horse Local Plan



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a topic report prepared

on behalf of

The North Abingdon Local Plan Group



Traffic Jam on A34



Queue on Dunmore Road

1. Summary

- ◆ Traffic growth in the VOWH is steadily increasing and will be exacerbated by the development of 1,000 houses in the North of Abingdon, with an estimated minimum additional 1,500 vehicles.
- ◆ As 70% of additional jobs in the Vale will be in the Science Vale to the south of Abingdon, this will create significant commuting traffic southwards either through the town or orbital road. Both routes are already congested.
- ◆ Air quality in Abingdon town is already above action limits – and will be exacerbated by the additional traffic – especially as the key amelioration measure was to redirect traffic along Dunmore Road – now predicted to carry an additional load of local traffic, multiple additional road junctions (possibly as roundabouts) with the new housing estates, as well as being slowed by the need for pedestrian crossings, cycle routes and reduced speed limits for school children.
- ◆ Mitigation measures of a full diamond junction at Lodge Hill, widening of the A34 and an additional river crossing to the south of Abingdon (to access the Culham Science Park) will require substantial investment well beyond the scope of CIL (Community Infrastructure Levy).
- ◆ A more sensible measure would be to locate the additional housing required by jobs growth nearer the employment sites – especially as it is a goal of the plan to encourage the use of more ecologically friendly means of commuting (walking, cycling and public transport) which is clearly impractical if the housing is located to the north of Abingdon.

2. Predicted Traffic growth

- 2.1. As part of the Local Plan 2031, a summary paper has been produced summarizing the main factors affecting transport and accessibility resulting from the proposed housing and employment development¹.
- 2.2. In this document, it reports that over the decade 2000 – 2010, overall traffic flow in VOWH has increased by 2%² (1.1.50), with a 3% rise in use of local roads (1.1.51) It is anticipated that traffic growth 2003 – 2015 will be +24% and 2003 – 2025 +35% (1.1.52). Increasing the number of houses opposite Long Furlong and East Peachcroft will increase the number of cars using Dunmore Road and Twelve Acre Drive even more.
- 2.3. In the 2011 transport census, there were ~ 1.5 cars/household. An additional 1,000 houses in North Abingdon will therefore equate to an extra 1,500 cars using the

¹ Topic paper 6 Transport and Accessibility (November 2014) Local Plan 2031 Part 1 Strategic Sites and Policies.

² References to paragraph numbers in 10_28_14_EqIA Vale local plan FINAL v1.pdf

roads. Currently, Long Furlong and Peachcroft account for some 3,630 houses³. The additional 1,000 houses will therefore amount to a 28% increase in cars locally. The existing roads will not be able to cope with this.

- 2.4. Most of the predicted 23,000 jobs to be created will be in the Science Vale to the south of Abingdon (70%⁴). Currently, as home-working amounts to only 15% (1.1.48), and use of public transport 9% of commuting (1.1.49), 76% of these additional workers will be travelling by cars southwards, as no bus routes connecting Abingdon to the Science Vale use either Dunmore Road or Twelve Acre Drive (serving either Long Furlong or Peachcroft), despite it being a Vale policy to encourage more environmentally friendly transport – such as the use of Public transport or cycling and walking. For the latter two means of transport to be feasible, the proposed housing would need to be situated preferably less than five miles for cycling and one mile for walking from the location of these new jobs. The SA report Appendix IV Summary (page 140) confusingly claims that North Abingdon would result in reducing the need to travel – which is counter to the logic presented above.
- 2.5. Those workers destined for Culham will need to travel through Abingdon Town unless another river crossing is created⁵ and possibly a northern Town bypass off Audlett drive.

3. Impact of increased traffic on Air Quality

Air quality is already a serious problem in the Town due to high traffic flows. Those destined for Milton Park, Didcot and Harwell will most likely travel down the A34. Currently, these will use the orbital Dunmore road and join the A34 at the Marcham interchange. There is already a significant constriction to traffic flow along the A415 opposite the Abingdon Court Care Home and Abingdon Hospital, which are now included in the Abingdon AQMA. The current Vale policy to ameliorate the air pollution problems in Abingdon is to divert traffic that would otherwise pass through the town onto the orbital road (Dunmore Road/Twelve Acre Drive) and onto the A34 at a full diamond junction at Lodge Hill. This will be compromised by increasing the local traffic on these roads due to the proposed development in North and North-west Abingdon on Green belt land. The mitigation suggested for North Abingdon in the SA of the VOWH Local Plan 2031 Pt 1 Appendix IV, section 9 (page 131) is merely to address noise – and not atmospheric pollution. It is disturbing that the summary (page 140) fails to present the only solution for this problem is to reduce traffic numbers and increase speed (for more efficient fuel consumption), as changing the balance of vehicle propulsion units is outside the VOWH's control.

³ Oxfordshire Population and household forecasts, June 2010, Oxfordshire County Council

⁴ VOWHDC Local Plan 2031 Ch 5 page 66)

⁵ Appendix page 78, the 'Science Vale Thames crossing'

The proposal for a new Primary School on the development north of Dunmore Road runs counter to the advice of the Commons Environmental Audit Committee due to Nitrogen oxides and diesel particulates⁶, which claims that children exposed to high NO₂ and particulate emissions have stunted and impaired lung development. This challenge was reported to be at least as serious as premature deaths from smoking. Distances of less than 150 metres to a busy road were of concern. The committee recommended that planners and road builders take more account of air pollution.

4. Evaluation of Transport Impact options

4.1. In the Evaluation of Transport Impacts (ETI)⁷, assessments have been made of the impact of a range of additional housing, employment numbers and locations. ETI stage 1 corresponds to not all the housing nor all the jobs (Feb 2013). ETI stage 2 is all of the housing but not all of the jobs (in response to Oxfordshire SHMA as a worst case to test additional sites), ETI stage 3 is all of the housing and all of the jobs (updated Feb 2014). ETI Stage 4 tested additional sites. ETI Stage 5 is essentially the final version of the Plan without any transport mitigation (which are described below as ETI stages 5A-5C). In all of them, the A34 is assessed as being above capacity for morning and evening peaks between Chilton, Marcham and Botley.

ETI Stage Number	1	3	5
Housing	13294	20560	20560
Employment	14300	14300	23000

4.2. For Stage 5 with the additional housing on Green Belt land to the north of Abingdon, average speeds on the A34 are estimated to be 43-45 km/h (~ 27-28 mph) – and above capacity (para 7.3.7).

⁶ School pupils and hospital patients at risk of killer pollution say MPs John Vidal, The Guardian Monday 8/12/2014.

⁷ 2014 Final ETI Report and Appendices

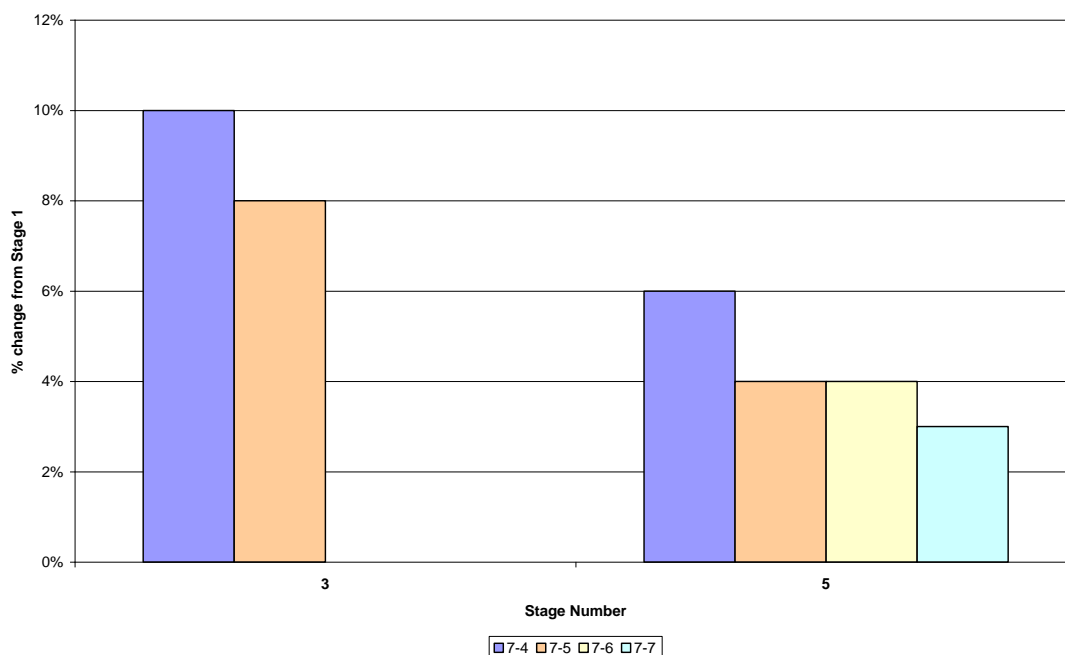


Table number	Road Type	Time
7-4	VOWH roads	Morning
7-5	VOWH roads	Evening
7-6	OCC highways	Morning
7-7	OCC highways	Evening

4.3. From the figure above displaying % delays to journey times as a function ETI stage number when compared to the base line ETI Stage 1, it can be seen that significant additional journey time delays are expected to be experienced with increased housing on both local roads and highways.

5. Local Road requirements

5.1. Dunmore road and Twelve Acre Drive are currently fast, gently curving roads with roundabouts only where they meet the Wootton, Oxford and Radley roads. These roads were originally built on the periphery of Abingdon along the boundary of the green belt. This was intended to allow uncongested travelling with few entry points from the north, as exemplified by Copenhagen Drive. The 40mph limit was imposed some years after they opened – it is often ignored and seems rarely enforced. Congestion occurs at peak times around the roundabouts. The recently (Spring 2014) implemented constriction of Dunmore Road traffic at the Wootton Road roundabout (now single lane) has already had a negative impact on traffic flow with queues commonly extending the full length of Dunmore Road. Significant increases in the number of cars will lead to grid-lock at peak times. The proposed housing developments will completely change the character of Dunmore Road. The road will travel through residential areas with several minor road intersections, roundabouts,

traffic calming measures, toucan pedestrian crossings and children travelling to the school. This will inevitably slow down the through traffic - perhaps necessitating a 30 mph limit. The whole of Abingdon will be affected, as motorists from Radley and East Abingdon decide to travel through the town centre instead. The loss of the Dunmore Road as the northern bypass cannot be replaced. This proposed development will discourage, not encourage travel along Dunmore Road. Consequently, traffic in the town centre will increase where the congestion is already legendary and now declared as an Air Quality Management Area (AQMA) with air pollution above legal limits, and potentially attracting fines for Local Authorities. The Vale AQMA Action Plan has declared that it will encourage the use of the peripheral road and A34 (through a diamond junction) to divert traffic from the town. This aspiration will be compromised by the proposed housing developments to the north of the town.

- 5.2. During the construction phase of the proposed development, significant additional disruption is likely to have a huge impact on the traffic along Dunmore Road and Lodge Hill and as a result divert additional traffic through the town centre, which is the only alternative route. The impact can be minimised by retaining the existing road layout, however, a major 40 mph road through a new residential area would be unacceptable.
- 5.3. Currently, getting onto Dunmore road from Boulter Drive and Alexander Close can be difficult when there is a lot of fast free flowing traffic along Boulter Drive (either side of the rush hour when there is congestion), particularly for those turning right across two lanes.
- 5.4. The western part of the proposed site (immediately to the east of Tilsley Park sports centre and west of the bridleway) cannot have access from Dunmore Road, due to the triangle of woodland which occupies the site on the south side and which has a footpath through it which is used regularly by many local people. As a result, all traffic from that end of the housing estate would have to come through the eastern part of that site and come onto Dunmore Road towards its eastern end – resulting in traffic queues.
- 5.5. The creation of a full diamond junction on the A34 at North Abingdon may encourage traffic destined for Milton Park, Didcot and Harwell to travel northwards up Lodge Hill and then southbound on the A34. If traffic from Peachcroft and further East use that route, this would reduce the flow along Dunmore Road round Abingdon to the A34. However property along Dunmore Road, including the new houses, have no option but to use Dunmore Road, whether they go West to the A34 or East to the A34. Some traffic from Wootton Road or Copenhagen Drive may start to use Dunmore Road as that may be their fastest route to the A34. Thus traffic around the West side of Abingdon might be reduced by the Lodge Hill diamond, but there will still be increased traffic flow on Dunmore and Twelve Acre Drive. There will also be increasing congestion on the A34.

6. A34 vulnerability

The A34 is a dual carriageway without a hard shoulder and is extremely busy at times (>66,000 vehicles/day south of Oxford)⁸ and vulnerable to excessive congestion when even one vehicle is forced to stop for any period. Total closure and chaos occurs when two lanes have to close – as was evidenced this week (15th December 2014) due to a serious accident overnight. In both of these cases traffic tries to divert through Abingdon, as there are so few alternative routes. According to modelling carried out on behalf of OCC Highways (by CH2M Hill and Atkins), it is probably not capable of coping with the additional traffic all this development in the Vale will generate, without significant investment to improve junctions and road width – probably requiring more funding than the development can supply.

7. Requirements if the Development were to go ahead

7.1. Road access

7.1.1. Before the planning application stage, additional traffic flow modelling should be carried out, with and without the proposed 4 way junction at Lodge Hill. This should improve access onto the A34, but may do little to reduce local congestion along Dunmore Road and Twelve Acre Drive. The A34 itself is currently only a two lane double carriageway without a hard shoulder, carrying very heavy traffic and vulnerable to excessive congestion when even one vehicle is forced to stop for any period. A simple puncture blocking one lane or accident can cause significant delays. Total closure and chaos occurs when two lanes have to close. It is far from clear that it is capable of coping with the additional traffic all this development in the Vale of White Horse will generate.

7.1.2. Before permission for development could be given, clear funding should be already be in place to convert the Lodge Hill A34 junction into a four-ways with the addition of south-facing slip-roads.

7.1.3. Mitigation options for ETI stage 5 have been considered in the ETI report⁷, as tabulated below.

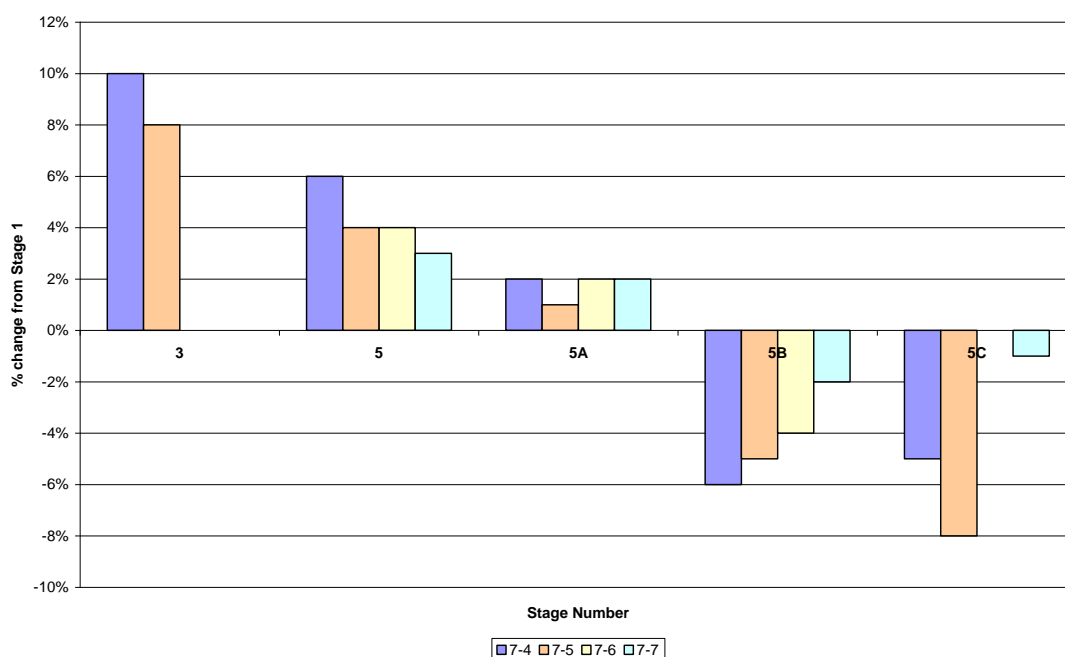
Option	Detail	Impact
5A	Widening of Milton interchange to Science Bridge	Little
5B	5A + new river crossing	Reduction in delays
5C	5A + A34 widening Hinksey to Milton	Reduction in delays

7.1.4. Sections 7.4.and 7.5 discuss this in more detail with the conclusion that widening of the A34 and a second river crossing will be needed to cope with the traffic increases if the Science Vale job and current planned housing locations are

⁸ Oxfordshire Traffic Flows Highways Agency 2011

implemented. This is on the basis of 222,765 cars in a 12 hour period transporting some 296,021 people⁹.

7.1.5. Details of Tables 7-4 to 7-7 are reproduced below in diagrammatic form summarizing the % changes in delays in journey time as a function of ETI Stage number – including the mitigation measures tabled above.

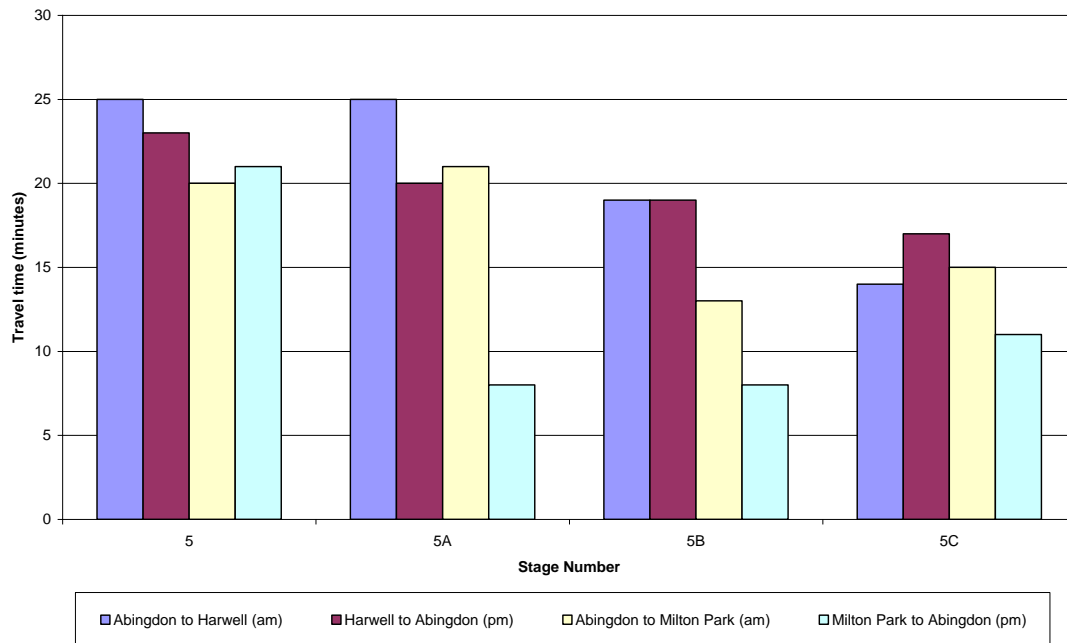


7.1.6. From a comparison of Stage 5 with road mitigation options 5A, 5B and 5C, it can be seen that implementation of a second river crossing and widening of the A34 will significantly reduce traffic congestion. In a recent article in the Abingdon Herald¹⁰, Oxfordshire Growth Board leaders are reported to say that a third of journeys on the A34 are delayed (*at present*). However, the addition of a third lane in each direction on the A34 between Junction 9 of the M40 and the Chilton interchange would cost £800M.

7.1.7. The resulting impact on journey time between Abingdon and Harwell or Milton Park for outwards in the morning and return in the evening is shown in the figure below as a function of Stage number.

⁹ 2014 Final ETI Appendices Table 1 Scenario 5.

¹⁰ Abingdon Herald November 26th 2014; Third lane on A35 'good for business' Pete Hughes



7.1.8. Again, the benefit of the implementation of a second river crossing and widening of the A34 will significantly reduce traffic congestion – significantly increasing the cost of housing development north of Abingdon. So for example a trip from Abingdon to Harwell is estimated to take 25 minutes whether or not the Milton interchange is improved, but this falls to under 20 minutes with a new river crossing and under 15 minutes with the A34 widened.

7.1.9. However, during the process of improving the A34, imagine the chaos if the A34 was down to a contra-flow with only one lane each way, for a year or so...

8. Positioning of junctions

8.1. Currently, getting onto Dunmore road from Boulter Drive, Alexander Close and other side roads via T junctions onto a fast road, can be difficult at peak times. If the new development also used T junctions, they would have similar problems. Positioning of any new T junctions will be problematic. These cannot be opposite to Alexander Close or Boulter Drive since the residents already have difficulty joining the fast moving traffic stream. Staggering the T junctions between these existing roads will be just as hazardous. Better street lighting may be necessary. Also straightening the Dunmore Road may also be needed since the gentle curve reduces visibility when a pair of vehicles is trying to exit these roads right and left.

8.2. Thus as part of the new development it will be appropriate to make roundabouts for access onto the site, most likely at the current Boulter Drive and Alexander Close junctions, if not at all access roads. This too would impact on the mean traffic flow, reducing its ability to act as an orbital road.

- 8.3. The constrictions recently introduced at the Wootton Road/Dunmore Road junction (for Cycle access) should be reversed, as on occasions the traffic queues extend the complete length of Dunmore Road.
- 8.4. Encouraging the use of public transport will need to specify Bus Lay-bys, so as not to disrupt traffic flow further¹¹. Currently, no buses use the orbital roads – so introduction of a regular service would be essential.
- 8.5. Other access roads should be considered - perhaps along the Northern edge of both sites, meeting at a roundabout on the Oxford Road, part way up Lodge Hill – but this would be very intrusive on Lodge Hill. A new northern bypass that skirts around the proposed development, which crosses under the A34 and lengthens the route is clearly impractical. Dunmore Road was designed as the part of the northern bypass on the edge of town and cannot be replaced.
- 8.6. Appendix A for the Abingdon North site suggests that the houses should front onto the ring road. Not only is this currently a noisy road and an unattractive prospect, but it should be noted that none of the Long Furlong houses face into Dunmore Road – for good reason. This requirement should be reversed.
- 8.7. The Tilsley Park floodlights will cause light pollution to the new development, unless the orientation of the houses is modified to reduce this to an acceptable level.

9. Cycle routes and footpaths

- 9.1. The footpath and cycle path along Dunmore Road will be considerably busier which should be encouraged. The pedestrians, school children, joggers and cyclists are already at risk whenever they cross Alexander Close, Boulter Drive, Hanson Close and Langley Close. There is precious little time to cross safely and keep an eye on traffic from three directions. The junctions have wide entrances that allow the traffic to enter at high speed without pausing on Dunmore Road. This is good for Dunmore Road but lethal for people on the crossing. The only safe design, with the increased traffic, is a sharper corner where vehicles must give consideration to people crossing. Safe links and crossings to that would be needed.
- 9.2. All existing footpaths and the Bridleway across the site should be continued and improved as they can be expected to carry more traffic.
- 9.3. The path across from Peachcroft roundabout runs across to the top of Lodge Hill and then through the grounds of Radley College. Increasing pedestrian numbers along that path may be a problem for the College. In addition, a pedestrian crossing may need to be introduced here and the speed limit reduced to 30 mph. A recent fatality (27th November 2014) demonstrates the need for better pedestrian provision here.

- 9.4. Cycle access into Abingdon is poor. There is a Bridleway running down from Dunmore Road to the Community Centre and then through into South Avenue. This is the only non-road route from the Dunmore Road side into Abingdon. It is a narrow path in some places. It could be widened and improved, to allow better cycle and pedestrian access into town (for example to go to the Northcourt Road shops.
- 9.5. There are Cycle tracks from Appleford Drive along the southern edge of Peachcroft to the Radley Road, and along the edge of Twelve Acre drive to the north. There are no paths into Abingdon.
- 9.6. More pedestrian links across Dunmore Road than the single pedestrian crossing mentioned in the draft plan will be needed. There will be a steady stream of children travelling to the secondary schools in West Abingdon, as well as the new proposed primary school – in addition to shoppers and commuters using the footpaths and bus stops. They must be encouraged to cross safely without convenient shortcuts. The existing Toucan crossing opposite Tilsley Park is inaccessible.
- 9.7. A crossing is required between Alexander Close and the Oxford Road roundabout leading south to the bus stop and the town centre. This will clearly impede the traffic around the Oxford Road roundabout. The crossing needs to be close enough to the Oxford Road without traffic backing up on the roundabout. Placing the crossing too far up the rise will discourage many residents to ascend the hill. A crossing at this position seems impractical but is essential. A pedestrian underpass or bridge would be out of character for this area.
- 9.8. Placing a pedestrian crossing on the Lodge Hill Road will interfere with the northern gateway into Abingdon.
- 9.9. How will resident access the bus stops along major roads, with fast flowing traffic in poor winter visibility?
- 9.10. Good cycle provision on the new estate is also important. Suggestions are for crossings at:
- i The corner of the Oxford Road and Dunmore road to access the regular bus services on the Oxford road and for general access
 - ii Possibly at Alexander Close
 - iii Probably at Dunmore road to access the primary school, medical centre, nursery and community hall at the bottom of Boulter Drive
 - iv Certainly where the Bridleway along the green strip to Sunningwell crosses Dunmore road and the footpath link into South Avenue.
- 9.11. Links through the existing development may need to be improved. However, it should be appreciated that these will further congest traffic flow.

10. Traffic noise mitigation from the A34

- 10.1. Mitigation is mentioned in the plan¹¹, but road noise from the A34 (and the busy Dunmore road) already affects the existing Long Furlong development and it will have more effects on the proposed new site to closer proximity, as sound levels decrease by the inverse square law ($1/r^2$) of distance from the sound source. Pollution may be a problem nearer to the A34. Also at some stage the A34 may be widened and space should be left for this to happen. Thus steps to cater for these problems will be needed. Options seem to be a tall and heavy fence along the A34 or a long mound of earth with trees and bushes on it – or maybe both? Similar measures to protect Westminster Way alongside the A34 to the north of Botley have been ineffective.
- 10.2. A recent accident on the A34 in which a coach was shunted down the bank near Drayton illustrates the vulnerability of any development site adjacent to the A34 to accidents or fuel/chemical spills.
- 10.3. VOWHDC seems to think that having houses in this location would enable the building of a diamond interchange at Lodge Hill. However, the increase in traffic at either this upgraded interchange or at Marcham would tend to increase problems on the A34, unless this were widened at the same time. The proposed road widening scheme would be essential between Marcham and Botley to ease the traffic flow as mentioned in the Appendices to the plan¹¹ - although will the development generate sufficient funds to cover the enormous expense to improve the road as well as its junctions?

¹¹ Local Plan Appendices A Section 3 Abingdon-on-Thames (pages 7-11)