



Aylesbury Vale District Council:
Direction of growth for housing at
Aylesbury: Sustainability Appraisal

October 2008

Aylesbury Vale District Council
Direction of growth for housing at Aylesbury: Sustainability Appraisal

A report by **CAG Consultants**

October 2008

CAG CONSULTANTS
Gordon House
6 Lissenden Gardens
London NW5 1LX
Tel/fax 020 7482 8882
hq@cagconsult.co.uk
www.cagconsultants.co.uk

for direct enquiries about this report please contact:

Niall Machin
CAG Consultants
10 Hawarden Grove
London SE24 9DH
tel 020 8678 8798 mob 07896 532145
nm@cagconsult.co.uk

Contents

Contents	1
1. Background and introduction	2
2. SA Framework objectives	4
3. Comparison with baseline situation	7
4. Note on the evidence base	12
5. The growth options	14
6. Growth options: summary of impacts	17
Annex 1. Appraisal tables	18
Annex 2. Maps showing the three options	55
Annex 3.	59

1. Background and introduction

This Sustainability Appraisal SA concerns options for directions of growth of housing for Aylesbury. It will accompany the additional public consultation on these directions of growth planned for autumn 2008. **Please note** that this is a non-statutory additional phase of the Local Development Framework (LDF) process. The process for developing the Core Strategy is on-going and additional evidence is still in the process of being gathered. The recommendations of this SA and the results of further evidence gathering will be fed into the Core Strategy development process.

As part of the preparation of the Core Strategy Local Development Document (LDD) the Council are required to undertake a process of Sustainability Appraisal (SA) incorporating Strategic Environmental Assessment (SEA)¹. SA is a process to ensure that all plans and programmes, which relate to land use, are compatible with the aims of sustainable development.

*'Sustainability appraisal is a systematic and iterative appraisal process, incorporating the requirements of the Strategic Environmental Assessment Directive. The main purpose of sustainability appraisal is to appraise the social, environmental and economic effects of plan strategies and policies, from the outset of the preparation process, so that decisions can be made that accord with the objectives of sustainable development.'*²

The aim of Sustainability Appraisal is to make sure that plans are doing as much as they can to support the delivery of social, economic and environmental objectives at the same time. Although planning authorities do their best to address these issues, it is easy to miss opportunities for better supporting social, economic and environmental objectives, and for reducing any conflicts. Sustainability Appraisal offers a systematic way for checking and improving on plans as they are being developed.

The preferred option drafts of the Core Strategy and Aylesbury Allocated Sites development plan documents (DPDs) were subject, together with their accompanying Sustainability Appraisals (SAs), to public consultation in July/ August 2007.

¹ Hereafter, all references to SA incorporate SEA requirements.

² Planning Policy Statement 12 – Local Development Frameworks

Following the consultation, the Council decided to re-consult on the directions of growth for Aylesbury for a number of reasons:

- There was significant public concern about the southern growth arc;
- Issues came to light questioning whether key infrastructure could be delivered. Given the government's increased emphasis on deliverability, this uncertainty meant there was a high risk of the plan failing; and
- A review and update of the evidence has shown that the choice of the most suitable direction of growth is not clear-cut and, as more information has come to light, the Council want to make sure that the public can comment on this new information.

The review of further evidence has indicated that two other options are worthy of further investigation and additional public consultation. The maps, attached as annex 2 to this report, set out these three options.

Aylesbury Vale District Council (AVDC) subsequently contracted CAG Consultants to undertake an 'addendum' SA of the three options, against a baseline scenario. This 'addendum' SA has been done to accompany the consultation process on the three growth options planned for October 2008. This report describes how the appraisal was done and how each option performs against sustainable development objectives. It does not make recommendations on whether a particular option should be developed, but describes its strengths and weaknesses, and suggests potential approaches to mitigation.

This addendum SA work is being undertaken by the Council as good practice for the sake of completeness: it is not a legal requirement (as it addresses an additional non-statutory round of public consultation). Work is still ongoing in terms of developing the Core Strategy and undertaking research to support the evidence base: such studies to be completed before the submission of the Core Strategy and the decision on the direction of growth.

2. SA Framework objectives

The following appraisal uses the Sustainability Appraisal Framework as drawn up for previous SAs on AVDC Local Development Framework documents³. However, this has been slightly revised to take into account recent changes, in particular the revision of the South East Regional Sustainable Development Framework and feedback received at an SA workshop that was held with key stakeholders on 24th September 2008. The broad outcomes of the workshop and a list of attendees are set out in annex 3. The key items for the workshop were:

- Commenting on the SA Framework objectives and proposed revisions;
- Discussing the impact of the 3 growth options on the SA Framework objectives.

Consequently, SA objectives set out in Table 1 below, have been used in this appraisal. SA objective text that is underlined shows the changes to the original SA Framework.

Table 1. SA Framework objectives

1. HOUSING. To ensure that everyone has the opportunity to live in a decent, <u>affordable, safe and sustainably constructed</u> home.
2. CRIME AND SAFETY. To reduce the fear and level of crime and anti-social activity.
3. ACCESS TO SERVICES. To improve accessibility to essential services and facilities to provide opportunities to obtain good access to high quality health, education, recreation and other community facilities and services.
4. COMMUNITY IDENTITY. To encourage a sense of community identity in which all individuals feel able to play a part.
5. HEALTH AND EQUALITIES. Improve the health and well being of individuals and reduce <u>inequalities</u> .

³ The original SA Scoping Report and subsequent SA reports can be found on the Council's SA web pages: <http://www.aylesburyvaldc.gov.uk/planning-building/planning-policy/avldf-framework/sustainability-appraisal/>

<p>6. TRANSPORT AND TRAVEL. To encourage the use of sustainable and integrated methods of transport, <u>promote sustainable travel and promote policies which reduce the need to travel by private car in order to reduce negative effects on the environment.</u></p>
<p>7. WATER AND CLIMATE CHANGE ADAPTATION. <u>Ensure that the district is prepared for the impacts of climate change and encourage the reduction of water consumption to ensure the supply of water for the public remains sustainable.</u></p>
<p>8. BIODIVERSITY. To maintain and enhance biodiversity.</p>
<p>9. GREEN INFRASTRUCTURE. <u>To maintain and enhance provision of and access to green infrastructure.</u></p>
<p>10. LANDSCAPE AND HERITAGE. To conserve and enhance the landscape and townscape character of Aylesbury Vale <u>and protect designated and undesignated assets.</u></p>
<p>11. ENERGY AND CLIMATE CHANGE. To reduce contributions to climate change through: (a) Sustainable building practices; (b) Maximising the potential for renewable energy and energy conservation; <u>and (c) reducing greenhouse gases.</u></p>
<p>12. WASTE. To reduce the amount of waste going to landfill sites by <u>reducing the amount of waste produced</u>, re-using or recovering it through recycling, composting or energy recovery.</p>
<p>13. LAND USE EFFICIENCY. To improve the efficiency of land use through the re-use of existing buildings & developing on previously developed land (PDL).</p>
<p>14. FLOODING. To minimise the risk of flooding in relation to both new and existing development.</p>
<p>15. BUSINESS. To positively attract business to the district whilst allowing for the retention and expansion of existing local businesses.</p>
<p>16. ECONOMY*. To encourage a diverse economy which is focused on higher value added, lower impact activities.</p>
<p>17. SKILLS. To develop and maintain a skilled workforce which matches the needs of existing and future businesses.</p>

** The previous SA objective on tourism 'to increase the profile of the District as a place to visit' was deleted following the September workshop as it was not seen as an appropriate SA objective. Instead, issues relating to the promotion of sustainable tourism are captured under SA objective 16, Economy.*

Deliverability

In addition to the 17 SA objectives set out in table 1, the Council will also need to take into account the issue of 'deliverability' of the growth options. Whilst this has not been addressed within the SA via a specific objective (the 3 growth options are all taken as being realistic options), issues of deliverability are taken into account with some of the existing SA objectives. For example, in terms of habitat creation as potential mitigation for loss of valuable wildlife habitats – where could this feasibly take place and what are the costs/ technical issues?

3. Comparison with baseline situation

Government guidance on the preparation of SAs on DPDs^[1] states that:

"Given the duty under the Act [PCP Act 2004] on those preparing a DPD to contribute to sustainable development, it is essential for it to set out to improve on the situation which would exist if there were no DPD. It should also aim to improve on effects of existing DPD or 'saved plan'. To test this, options considered often include scenarios termed 'no plan' and 'business as usual'. It is important to be aware that baselines will change over time under 'no plan' and 'business as usual' options, as well as under new DPDs".

In this case, it is helpful to compare the 3 growth options with current conditions and with a base situation on which the growth being tested is superimposed. This 'business as usual' scenario contains the growth that is already committed in the adopted Local Plan, notably development of the Berryfields, Weedon Hill and Aston Clinton Road Major Development Areas (MDAs), along with a transport package that includes the Western Link Road running between the A41 at Berryfields and the A413 at Weedon Hill and public transport services (including park and ride) linked to the MDAs.

However, given that we must accept that over the next 20 years there will be additional growth to that proposed in the Local Plan (which planned forward from 2004 to 2011). Therefore, we have termed the business as usual comparison 'baseline plus' and assumed that there would be a continuation of trends characterising the Local Plan, i.e.:

- 65% of new housing and jobs in the District would be in Aylesbury (from 1991-2011 15,600 houses planned for AVDC: assuming the same amount were needed from 2011-2031 this would mean 10,140 for Aylesbury);
- 9840 jobs forecast for the District 1991-2011: this would mean 6396 jobs between 2011 and 2031;
- Aspiring towards continual decrease in car journeys to work;
- Continued increases in use of public transport, walking and cycling to work;

^[1] Sustainability Appraisal of Regional Spatial Strategies and Local Development Plan Documents (ODPM Nov 2005)

- Minimal new road building; and
- Emphasis on developing brownfield land.

Clearly there are limits to how realistic such an assumed scenario would be: in particular it is doubtful whether such housing growth could continue on brownfield land without spilling out onto greenfield sites and so on.

Table 2 below assesses the impact of the 'baseline plus' scenario on the SA Framework objectives.

Key to table 2. Impact of growth option is likely to be:

++ Major positive impact	? Uncertain
+ Minor positive impact	- Minor negative impact
0 Neutral	-- Major negative impact

SA Framework objectives	Impact on 'baseline plus' scenario	
	Score	Commentary
1. HOUSING. To ensure that everyone has the opportunity to live in a decent, affordable, safe and sustainably constructed home.	--	New housing would not meet the identified demand in the SE Regional Plan.
2. CRIME AND SAFETY. To reduce the fear and level of crime and anti-social activity.	0	No direct relationship.
3. ACCESS TO SERVICES. To improve accessibility to essential services and facilities to provide opportunities to obtain good access to high quality health, education, recreation and other community facilities and services.	+	Concentrating development largely within the urban area likely to be beneficial in terms of access to facilities and services.
4. COMMUNITY IDENTITY. To encourage a sense of community identity in which all individuals feel able to play a part.	0?	No settlement coalescence if development confined to urban area: however this is unlikely in 'baseline plus' scenario. Unclear to what degree concentrating development in the urban area would have on 'town cramming', although likely to be both positives and negatives. Impact on community identity unclear.
5. HEALTH AND EQUALITIES.	-	Whilst delivery of some housing and jobs likely benefit health, failure to meet

<p>Improve the health and well being of individuals and reduce inequalities.</p>		<p>SE Regional Plan housing targets weakens impact. The transport modelling shows that there is likely to be a significant increase in <i>traffic congestion</i> by 2026 for the baseline (using committed growth under the current Local Plan, but applying equally to 'baseline plus'). This is likely to have significant environmental impacts arising from air and noise pollution.</p>
<p>6. TRANSPORT AND TRAVEL. To encourage the use of sustainable and integrated methods of transport, promote sustainable travel and promote policies which reduce the need to travel by private car in order to reduce negative effects on the environment.</p>	- -	<p>The modelling (using committed growth under the current Local Plan, but applying equally to 'baseline plus') predicts a significant increase in car journeys from 2005 until 2013, which it predicts will then slightly decrease to 2026. The fall after 2013 is based on the projected implementation of a Smarter Choices programme. The predicted car journeys for 2026 is 17% more than 2005, and over 40,000 less per day than for the three growth options. The modelling also predicts a significant increase in congestion (and therefore a likely increase in air and noise pollution) until 2013, which it predicts to fall until 2026 with the implementation of Smarter Choices.</p>
<p>7. WATER AND CLIMATE CHANGE ADAPTATION. Ensure that the district is prepared for the impacts of climate change and encourage the reduction of water consumption to ensure the supply of water for the public remains sustainable.</p>	- ?	<p>New housing and associated employment may exacerbate impacts of climate change and lead to increased water demands and greater per capita use of water. As Code for Sustainable Homes is implemented, new homes become more water efficient and per capita use starts to decrease.</p>
<p>8. BIODIVERSITY. To maintain and enhance biodiversity.</p>	0?	<p>Concentrating development in the urban area likely to have little impact on acknowledged biodiversity assets (which tend to be outside of the town). Concentrating development in the urban area could result in loss of nature conservation amenity (e.g. loss of brownfield land that may have developed wildlife value). However, as the 'baseline plus' scenario envisages that development will spread onto greenfield sites over time (indeed Local Plan Major Development Areas do include greenfield sites), then so biodiversity would be affected – hence this is scored as uncertain.</p>
<p>9. GREEN INFRASTRUCTURE. To maintain and enhance provision of and access to green infrastructure.</p>	- ?	<p>Concentrating development in the urban area likely to lead to pressure on existing green infrastructure within the town and on its immediate edge, and would provide little opportunity for improvement (area already in deficit). However, would protect green infrastructure in the countryside outside of the town.</p>

<p>10. LANDSCAPE AND HERITAGE. To conserve and enhance the landscape and townscape character of Aylesbury Vale and protect designated and undesignated assets.</p>	+	<p>Negligible impact on built heritage given policies to protect townscape features of importance.</p> <p>Broadly concentrating development in the urban area would serve to protect the wider landscape.</p>
<p>11. ENERGY AND CLIMATE CHANGE. To reduce contributions to climate change through: (a) Sustainable building practices; (b) Maximising the potential for renewable energy and energy conservation; and (c) reducing greenhouse gases.</p>	- -	<p>The transport modelling predicts a significant increase in car journeys from 2005 until 2013, which it predicts will then slightly decrease to 2026. This overall increase will translate into significant increases in greenhouse gas emissions. These increases are likely to be lower than those predicted for the growth options.</p>
<p>12. WASTE. To reduce the amount of waste going to landfill sites by reducing the amount of waste produced, re-using or recovering it through recycling, composting or energy recovery.</p>	-	<p>Growth will increase the total amount of waste produced. However, the 'baseline plus' option likely to result in less waste/ growth than the 3 growth options.</p>
<p>13. LAND USE EFFICIENCY. To improve the efficiency of land use through the re-use of existing buildings & developing on previously developed land (PDL).</p>	+ ?	<p>Emphasis on building on brownfield land, although 2 MDAs proposed in Local Plan were on Greenfield and under 'baseline plus' new development increasingly likely to spill into greenfield.</p>
<p>14. FLOODING. To minimise the risk of flooding in relation to both new and existing development.</p>	- ?	<p>Increased development in the urban area may exacerbate flooding risk: uncertain how much potential for improving flood defences.</p>
<p>15. BUSINESS. To positively attract business to the district whilst allowing for the retention and expansion of existing local businesses.</p>	+	<p>Scenario includes provision for significant amount of new employment.</p>
<p>16. ECONOMY*. To encourage a diverse economy which is focused on higher value added, lower</p>	0	<p>No direct relationship.</p>

impact activities.		
17. SKILLS. To develop and maintain a skilled workforce which matches the needs of existing and future businesses.	0	No direct relationship.

Summary of 'baseline plus' impact

Whilst there would be some benefits from concentrating development in the urban area, these are likely to reduce over time as capacity for development reduces and pressure on Greenfield sites increases. The baseline plus scenario has major negatives in terms of satisfying housing need and on the health and environmental impact of road transport and congestion.

4. Note on the evidence base

This Addendum SA has been able to draw on additional evidence gathered by the Council since the production of the July 2007 SA⁴. A list of additional evidence considered is set out in Table 3 below. For a full list of LDF evidence base documents please see:

<http://www.aylesburyvalecd.gov.uk/planning-building/planning-policy/avldf-framework/avldf-evidence-base/>

Table 3. Additional evidence considered	Date of issue
Transport modelling, Eastern Links	August 2008
Aylesbury LDF TN4 (Technical Transport note 4) , Scenario Tests (Halcrow)	August 2008
Phase 2 Ecological Assessments : Directions of Growth Options	August 2008
Landscape Character Assessment	May 2008
Strategic Housing Market Assessment -	July 2008
Employment Land Study -	March 2008
Ecological Survey Works, South West Aylesbury (LDA)	Autumn 2007
Ecological Assessment of LDF Options (Jacobs Babbit)	August 2008
Options for the Direction of Growth – Summary of Service Provider Infrastructure Requirements	July 2008
Buckinghamshire Draft Green Infrastructure Strategy	April 2008
Landscape Impact Assessment	October 2008

However, as of October 2008 there are still outstanding evidence reports that we were not able to consider. These are set out in Table 4 below with indicative publication dates.

Table 4. Additional evidence still to report	Expected publication

⁴ Core Strategy DPD SA, Preferred Options, July 2007, Carter Jonas.

Stage 2 Strategic flood risk assessment	Due to be complete January 2009.
Water cycle strategy	Due to be complete January 2009.
Utilities Update : Directions of Growth Options and rest of District Spatial Strategy	Due to be complete November 2008.
Infrastructure Viability Study	Due to be complete November 2008.
Landscape Impact Assessment	Due to be complete October 2008.
Strategic Housing Land Availability Assessment	Final report due early 2009

Therefore, we have appraised the growth options on the basis of the available evidence to helpfully assist with the final development of the Core Strategy.

5. The growth options

The growth options are formed of combinations of the following sites or 'areas of development potential' which are also depicted on Figure 2 on page 16:

- Site C- North of Aylesbury, between Watermead and the A418.
- Site D- South of Aylesbury, west of the A41 and east of the A413.
- Site E – South of Aylesbury, between the Princes Risborough and A413.
- Site F – South of Aylesbury, west of Princes Risborough railway line and south of the A418 (Oxford Road).
- Site G – 'Broughton Crossing', East of Aylesbury, south of Bierton along the Grand Union Canal.

Table 5 below defines the three growth options.

Table 5 Growth Option Definitions (see maps set out in annex 2).

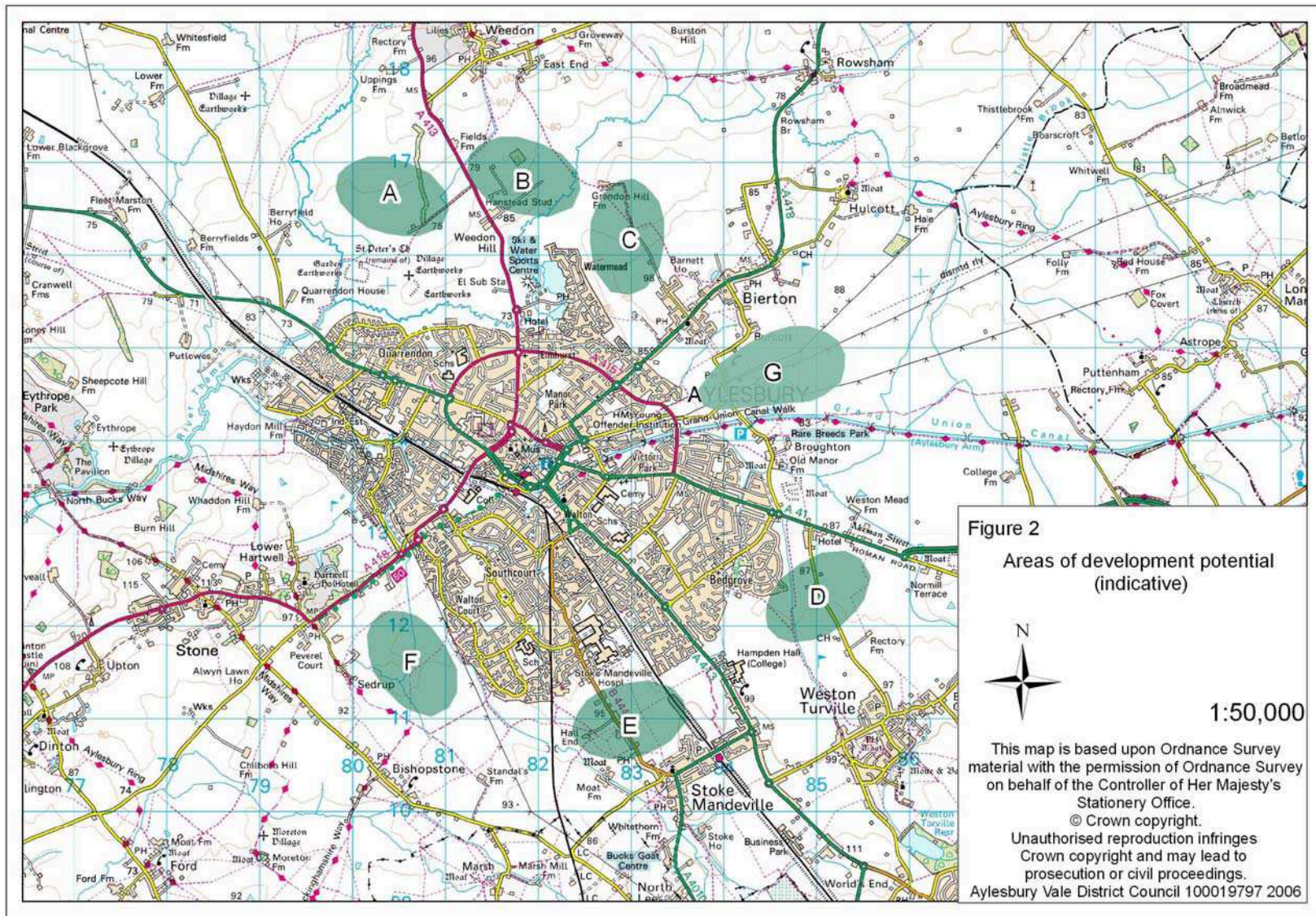
Option	Details
1. Eastern Growth Arc	Includes Areas of Development Potential C, D and G and 'potential new roads required for natural growth' and 'potential new roads required for development' (Northern Link Road, Eastern Link Roads and South East Distributor Road).
2. Southern Growth Arc	Includes Areas of Development Potential D, E and F and proposed new roads required for development (Southern Distributor Road).
3. Hybrid East and	Includes Areas of Development Potential D, E, F and G and 'potential new roads required for natural growth' and proposed new roads required for development (Eastern Link Roads and Southern Distributor

South	Road).
-------	--------

Note on Eastern Link Roads

The Council consider that the Eastern Links are essential to the future growth of Aylesbury, to support traffic movements across the town and reduce the risk of extreme congestion, including impact on existing Air Quality Management Areas.

Therefore, in terms of the SA, we have assumed that the Eastern Link Roads are included within all 3 options.



6. Growth options: summary of impacts

We have used the SA Framework set out in Section 2 to test the sustainability of the three growth options. The full appraisal tables assessing the impacts of the three growth options on the SA objectives is set out as **Annex 1**. Table 6 below summarises the impacts in what is hopefully an easy to read format.

Table 6. Sustainability appraisal of options: summary

Objective	Option 1 East	Option 2 South	Option 3 Hybrid
1. HOUSING.	++	++	++
2. CRIME AND SAFETY.	0	0	0
3. ACCESS TO SERVICES.	-	+	0
4. COMMUNITY IDENTITY.	-	-	-
5. HEALTH AND EQUALITIES.	0	0	0
6. TRANSPORT AND TRAVEL.	--	--	--
7. WATER AND CLIMATE CHANGE ADAPTATION.	-?	-	-?
8. BIODIVERSITY.	--	?	--
9. GREEN INFRASTRUCTURE.	-	+	+
10. LANDSCAPE AND HERITAGE.	-	-	-
11. ENERGY AND CLIMATE CHANGE.	--	--	--
12. WASTE.	--	--	--
13. LAND USE EFFICIENCY.	--	--	--
14. FLOODING.	-?	+	-?
15. BUSINESS.	+	+	+
16. ECONOMY*.	0	0	0
17. SKILLS.	0	0	0

Key to table 6. Impact of growth option is likely to be:

++ Major positive impact	? Uncertain
+ Minor positive impact	- Minor negative impact
0 Neutral	-- Major negative impact

Annex 1. Appraisal tables

The following scoring system is used in the appraisal tables below. The assessment is based on the current situation and trends for each objective, utilising the additional evidence base (as available to 24.10.08) set out in Section 4.

Key to appraisal tables. Impact of growth option is likely to be:

++ Major positive impact	? Uncertain
+ Minor positive impact	- Minor negative impact
0 Neutral	-- Major negative impact

Objective 1. To ensure that everyone has the opportunity to live in a decent, safe and sustainably constructed home.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
++	See comments below.	++	See comments below.	++	See comments below.
<p>Conclusions and summary: Options 1, 2 and 3 would each deliver 10,000 units. They will be expected to meet the relevant Code for Sustainable Homes level. In terms of affordability and mix, the development are likely to include:</p> <ul style="list-style-type: none"> ▪ 35% Affordable Housing required on each site; ▪ Tenure mix 75% rented/25% shared ownership; ▪ Mix likely to be 30% 3 bed; 30% 2 bed; remainder 1 beds flats & 4/5 bed houses. <p>About 32% of the county's households contain dependent children, which is slightly above the regional and national average (Aylesbury Vale the highest). This group are projected not to increase, although since most of the county's increased housing stock is planned to be in major urban extensions, there are questions of mix and balance which argue against a focus only on smaller dwellings for the increased number of smaller (and older) households.</p>					

Sources of information:
Strategic Housing Market Assessment July 2008
Up dated infrastructure schedules for the three growth arcs, supplied by AVDC Sept 08.

Objective 2. To reduce the fear and level of crime and anti-social activity.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
0		0		0	
<p>Conclusions and summary: No significant impact arising from land allocation choices.</p> <p>Sources of information:</p>					

Objective 3. To improve accessibility to essential services and facilities to provide opportunities to obtain good access to high quality health, education, recreation and other community facilities and services.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
-	Two of the three sites (Sites C and G) have poor access to existing public sports or recreational facilities with the main development areas being outside 20 minutes walk of existing facilities (Sport England Guideline). These sites are therefore likely to require entirely new provision. Site D has existing public sports and recreational	+	All sites have existing public sports and recreational facilities within 20 mins walk of any future community. Also, this option offers the potential to enhance existing facilities at Stoke Mandeville.	0	Site G has poor access to existing public sports or recreational facilities i.e. within 20 minutes walk (Sport England Guideline). It is likely that it would require entirely new provision. Sites D, E and F have existing public sports and recreational facilities within 20 mins walk of any future

	<p>facilities within 20 mins walk of any future community. Also, Site D offers the potential to enhance existing facilities at Stoke Mandeville.</p>				<p>community. These sites also offer the potential to enhance existing facilities at Stoke Mandeville.</p>
--	---	--	--	--	--

Conclusions and summary:

In general, of the 3 growth options, option 2 comes out better in terms of existing facilities as it has better existing open space provision (see objective 9), better access to existing public sports and recreation facilities (and potential to enhance existing facilities) and potential to enhance existing community centres. Option 1 is the least favourable (sites C and G having poor access to existing public sports or recreation facilities, requiring all new community centres and poor open space provision). In addition, the town's major sports and leisure centre is on the South side of town.

All 3 options would be expected to provide a variety of new services and facilities: however existing provision/access is scored more positively than potential future provision. We accept that (for example) the sports and recreational needs of new residents from development of this scale are unlikely to be met by these existing facilities. However, existing provision (with potential for enhancement) is a more sustainable prospect than future provision (which can be said to have a degree of uncertainty).

All 3 growth options are similar in terms of their requirements for new facilities (schools, adult/ young people/ child care, children’s play, fire stations, libraries and crematoria/ burial grounds) and their existing access to hospitals.

(Open Space - see green infrastructure objective 9).

Transport/ access

As discussed under objective 6, the transport modelling predicts significant increases in congestion, and travel time from 2005. This is likely to result in significant reductions in accessibility, though this may be partly offset by the provision of additional employment, schools and other services associated with development. No accessibility modelling of the options has been undertaken.

It is **recommended** that to inform the decision making process, the accessibility of the four options be modelled.

Sources of information:
Aylesbury Land Use Transport Strategy LDF Technical Note, Halcrow Group, 29 August 2008 (TN4 Paper)
ALUTS Summary Stats (provided by Buckinghamshire County Council)
AVDC Green Spaces Plan (2005-08)
Green Infrastructure Bucks CC (April 2008)
Up dated infrastructure schedules for the three growth arcs, supplied by AVDC Sept 08.
Health Impact Assessment of proposed housing developments on the edge of Aylesbury Town, Public Health Resource Unit Feb 2007.

Objective 4. To encourage a sense of community identity in which all individuals feel able to play a part.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
-	In terms of 'settlement coalescence' development to the east could result in loss of identity of Stoke Mandeville and Bierton, and possibly Weston Turville, although this could be mitigated to some extent by landscape buffers. Potential green infrastructure shown on masterplan maps part of buffer to some extent.	-	In terms of 'settlement coalescence' development to the south could result in loss of identity of Stoke Mandeville and possibly Bishopstone and Weston Turville, although this could be mitigated to some extent by landscape buffers. Stoke Mandeville appears most at risk. Potential green infrastructure shown on masterplan maps part of buffer to some	-	In terms of 'settlement coalescence' development to the east and south (hybrid option) could result in loss of identity of Stoke Mandeville and possibly Bierton and Weston Turville, although this could be mitigated by landscape buffers. Potential green infrastructure shown on masterplan maps part of buffer to some extent.

extent.

Conclusions and summary:

In terms of creating a sense of community identity, it could be argued that creating distinctive, stand alone new communities (away from Aylesbury) may be positive. However, it could also be argued that a lack of cohesion with the main urban area of Aylesbury could equally be a negative. Therefore, in terms of *relationship to Aylesbury town* we have scored all 3 options as neutral.

However, there is also the issue of settlement coalescence with other, smaller settlements around Aylesbury. In these terms, all three options could result in a degree of settlement coalescence and have therefore been given a negative score.

Recommendation: should green landscape buffer areas be used to prevent settlement coalescence, then these should be planned with other environmental issues in mind, e.g. protection and enhancement of biodiversity interest and wildlife habitats, provision of green walking and cycling routes, provision of linear parks and green infrastructure etc.

Sources of information:

Objective 5. Improve the health and well being of individuals and reduce inequalities.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
0	Two of the three sites (Sites C and G) have poor access to existing public sports or recreational facilities with the main development areas being outside 20 minutes walk of existing facilities (Sport England Guideline). These sites are therefore likely to require entirely new	0	All sites have existing public sports and recreational facilities within 20 mins walk of any future community. Also, this option offers the potential to enhance existing facilities at Stoke Mandeville.	0	Site G has poor access to existing public sports or recreational facilities i.e. within 20 minutes walk (Sport England Guideline). It is likely that it would require entirely new provision. Sites D, E and F have existing public sports and recreational

<p>provision.</p> <p>Site D has existing public sports and recreational facilities within 20 mins walk of any future community. Also, Site D offers the potential to enhance existing facilities at Stoke Mandeville.</p> <p>Air quality and noise – see below.</p>	<p>Air quality and noise – see below.</p>	<p>facilities within 20 mins walk of any future community. These sites also offer the potential to enhance existing facilities at Stoke Mandeville.</p> <p>Air quality and noise– see below.</p>
--	---	--

Conclusions:

Impact on wider determinants of health (housing, jobs)

Provision of new housing and associated economic jobs (including house building) likely to benefit health in the long term (for all options).

Impact on healthy lifestyles

Sites to the south of Aylesbury are better served by existing sports and recreation facilities.

Access to healthcare

All options are within reach of existing hospitals.

Impact on air pollution and noise

A key indirect health impact of the development is the effect of increased traffic on air and noise pollution. As discussed under objective 6, the transport modelling for all options looked at the likely impacts with and without the Eastern Link Road.

The transport modelling shows that there is likely to be a significant increase in *traffic congestion* by 2026 for all three options. This is likely to have significant environmental impacts arising from air and noise pollution. However, the TN4 Paper notes that the three growth options overall are not likely to result in a significantly worse

impact compared to the committed growth, provided the Eastern Link Roads are developed (although it predicts some worsening in the evening peak).

In the absence of the Eastern Link Roads, the modelling suggests that although all three options would result in significantly worse congestion (including impact on the Air Quality management Area around the junction of Tring Road and Oakfield Road) than committed growth, with Option 2 performing best.

In transport terms therefore, all three growth options are likely to result in significant indirect health impacts. Development of the growth options without the Link Road is likely to result in significantly worse congestion, leading to significantly worse health impacts arising from air and noise pollution across the town. These impacts are likely to be particularly significant at the junction of Tring Road and Oakfield Road, which is a designated Air Quality Management Area.

If the Eastern Link Roads are developed, all options are likely to result in similar levels of congestion.

All 3 options have been scored neutral on the basis that positive health outcomes from new housing are balanced by negative outcomes from increased congestion.

Recommendation: Masterplanning and future development of the Core Strategy will need to address provision of open space and recreational facilities as well as provision of local healthcare.

Sources of information:

Aylesbury Land Use Transport Strategy (ALUTS) LDF Technical Note 4, Halcrow Group, 29 August 2008 'TN4 Paper'. ALUTS Summary Stats (provided by Buckinghamshire County Council) Up dated infrastructure schedules for the three growth arcs, supplied by AVDC Sept 08.

Objective 6. To encourage the use of sustainable and integrated methods of transport and promote policies which reduce the need to travel in order to reduce negative effects on the environment.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
--	This option performs	--	This option performs best of the	--	The modelling predicts that in

	<p>worst in terms of promoting sustainable transport modes. The modelling predicts a 36% increase in car journeys compared to 2005. Impacts on air and noise pollution depend on whether the Eastern Link Roads are developed. (see conclusions below)</p> <p>New transport infrastructure required: Northern Link Road, Eastern Link Roads, part of the South East Distributor Road (total road link costs around £58m); 3 park and rides etc.</p>	<p>three growth options in promoting sustainable transport modes, though the predicted increase in car journeys is still 34%. Impact on air and noise pollution depend on whether the Eastern Link Roads are developed. (see conclusions below)</p> <p>New transport infrastructure required: Eastern Link Roads, Southern Distributor Road (total road link costs around £64m); 4 park and rides etc.</p>	<p>terms of promoting sustainable transport modes this option is worse than option 2 but slightly better than option 1. Impact on air and noise pollution depend on whether the Eastern Link Roads are developed. (see conclusions below)</p> <p>New transport infrastructure required: Eastern Link Roads, Southern Distributor Road (total road link costs around £64m); 3 park and rides etc.</p>
<p>Conclusions: The transport modelling for all options looked at the likely impacts with and without the Eastern Link Roads. The conclusions do not clearly favour one option over the other, though they do identify differences in types of transport impacts. Impacts on greenhouse gas emissions and accessibility are not currently addressed by the models.</p> <p>In terms of promoting sustainable transport modes, all options would result in significant increases in car journeys. Even with the projected implementation of a "Smarter Choices" programme, the three growth options would result in a third more car journeys than 2005 levels. However, the modelling shows that option 2 performs significantly better than the other growth options. It predicts 4500 less car journeys per day (i.e. 4500 more journeys in sustainable modes) for 2026 for option 2 compared to option 3. Option 1 is slightly worse than option 2</p>			

with an additional 700 journeys per day predicted. With options 2 and 3 there is also more opportunity to allow for new cycling and walking routes from the planned new development than there is for option 1.

Given the increase in car journeys, it is unsurprising that the transport modelling also shows that there is likely to be a significant increase in **traffic congestion** by 2026 for the three options. This is likely to have significant environmental impacts arising from air and noise pollution. However, the TN4 paper (see reference below) notes that the three growth options overall are not likely to result in a significantly worse impact compared to the committed Local Plan growth, provided the Eastern Link Roads are developed (although it predicts some worsening in the evening peak).

The TN 4 Paper predicts that, without the Eastern Links, there would be a marked worsening of congestion for all 3 options (compared to committed Local Plan growth), with option 3 performing best of the three. This has implications for environmental impacts such as air quality and noise, in particular the Air Quality Management Area identified at the junction of Tring Road and Oakfield Road. However, for the purposes of this appraisal, the Eastern Link Roads are included within each growth option. The deliverability of the Eastern Links is clearly a key issue for the Council.

In terms of **travel efficiency** the transport modelling also suggests that with the Eastern Link Roads, option 1 is the most efficient option in terms of travel time (i.e. it would result in the lowest journey times) and a combined measure of travel time and travel distance (this measure is called the generalised cost index, since it is used by the Government to represent the monetary value of travelling by car). However, option 2 is the best in terms of travel distance.

The TN4 Paper notes that *'in terms of environmental impacts, the use of the use of generalised cost alone to determine rankings may not be entirely satisfactory. An accurate measure of environmental impacts might have to give higher weight to total distance travelled and to queuing time than to the other elements of generalised cost'*. Therefore, whilst Option 1 ranks best in terms of the generalised cost index, with Option 2 next best, the TN4 Paper goes on to conclude that *'the better performance of the Southern Option [option 2] in respect of total distance travelled could put it on a par or slightly above the Eastern Option [option 1]'*.

Thus, whilst sometimes claimed, it is uncertain whether the generalised cost measure can be seen as a proxy for environmental impacts like emissions affecting air quality and climate, noise and community severance. As noted above in terms of congestion, there is little difference between the models. It may be that the efficiency results do

reflect differences in other transport impacts such as **accessibility and greenhouse gas emissions**. However, these impacts have not been modelled for the growth options. These issues are addressed separately in objectives 3 and 11 of this SA framework.

Summary

In summary therefore, all options are likely to result in significant environmental impacts arising from increased car journeys and increased congestion. The projected increases assume the implementation of a “Smarter Choices” programme (which evidence suggests can reduce car trips by around 10%). Development of the growth options without the Link Roads is likely to result in significantly worse congestion, leading to significantly worse environmental impacts arising from air and noise pollution. These impacts are likely to be particularly significant at the junction of Tring Road and Oakfield Road, which is a designated Air Quality Management Area.

If the Eastern Link Roads are developed, all options are likely to result in similar levels of congestion. Option 2 is likely to perform better than options 1 and 3 in promoting sustainable transport options. Accessibility, greenhouse gas emissions and health impacts of the options are addressed by other appraisal objectives.

It is **recommended** that: Further investigations need to be undertaken to put in place the interventions to mitigate the impacts of increased car journeys and congestion, immediate priority be given to the implementation of a Smarter Choices initiative. The final Core Strategy will need to action this point.

Sources of information:

Aylesbury Land Use Transport Strategy (ALUTS) LDF Technical Note 4, Halcrow Group, 29 August 2008 ('TN4 paper')

ALUTS Summary Stats (provided by Buckinghamshire County Council)

Up dated infrastructure schedules for the three growth arcs, supplied by AVDC Sept 08.

Objective 7. Ensure that the district is prepared for the impacts of climate change and encourage the reduction of water consumption to ensure the supply of water for the public remains sustainable.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
- ?	Climate change	-	Climate change	- ?	Climate change adaptation

<p>adaptation The main impacts of climate change are likely to be flooding, drought (and water demand), overheating in summer and extreme weather events. Development of this magnitude will obviously lead to a sizeable increase in water consumption, (although assuming new build conforms to Code for Sustainable Homes Level 6 this should reduce water consumption per capita). Flooding is addressed under objective 14.</p> <p>Sewerage For northern sites, including Site C, sewage would be pumped directly to sewage works on NW of town: least cost option.</p> <p>The assessed 'eastern option' differed from the current option so not</p>	<p>adaptation The main impacts of climate change are likely to be flooding, drought (and water demand), overheating in summer and extreme weather events. Development of this magnitude will obviously lead to a sizeable increase in water consumption, (although assuming new build conforms to Code for Sustainable Homes Level 6 this should reduce water consumption per capita). Flooding is addressed under objective 14.</p> <p>Sewerage Sites D, E and F would be highest cost option due to upgrade of northern sewer (to accept from Site D) and Site E to be pumped to Site F and thence up to sewage works. Needs improvements to both northern and southern trunk sewers. Foul drainage costs as for sewage.</p> <p>Although sewage and foul</p>	<p>The main impacts of climate change are likely to be flooding, drought (and water demand), overheating in summer and extreme weather events. Development of this magnitude will obviously lead to a sizeable increase in water consumption, (although assuming new build conforms to Code for Sustainable Homes Level 6 this should reduce water consumption per capita). Flooding is addressed under objective 14.</p> <p>Sewerage The assessed 'eastern sewage option' differed from the current option so not comparable, but an option with G and D could be medium cost? Foul drainage costs as for sewage.</p> <p>The previous 'eastern option' was thought to involve possibly more disruption in terms of works to sewers.</p> <p>The Southern option mean dedicated new infrastructure – could be preferable to upgrading existing system.</p>
---	--	--

	<p>comparable, but an option with C, G and D could well be medium cost. Foul drainage costs as for sewage.</p> <p>The previous 'eastern option' was thought to involve possibly more disruption in terms of works to sewers.</p> <p>Northern sites (including C) would mean dedicated new infrastructure – could be preferable to upgrading existing system.</p> <p>However, Thames Water considers there may be capacity problems in the north.</p>		<p>water costs higher for southern option, these could be offset by reduced water supply infrastructure costs for southern option as water could be drawn/ supplied from south and gravitate to the sewage works in the NW with minimal need for pumping.</p> <p>The Southern option would mean dedicated new infrastructure – could be preferable to upgrading existing system.</p> <p>Thames Water stated that they would prefer development to the south/south west of Aylesbury as the capacity here for the sewerage treatment works is greater than capacity elsewhere around the town. TW considered that it would also be cheaper and easier to install a main trunk from new development to the south of the town to the sewer.</p>		<p>Thames Water stated that they would prefer development to the south/south west of Aylesbury as the capacity here for the sewerage treatment works is greater than capacity elsewhere around the town. TW considered that it would also be cheaper and easier to install a main trunk from new development to the south of the town to the sewer.</p>
Conclusions and summary:					

In terms of adapting to the impacts of climate change, there appears to be little difference between the options (apart from flooding which is dealt with separately under Objective 14). Development of this magnitude will obviously lead to a sizeable increase in water consumption which results in a negative score. However, assuming new build conforms to Code for Sustainable Homes Level 6 this should reduce water consumption per capita.

Climate change is likely to increase the risk of drought due to:

- A greater proportion of rain running into rivers during predicted wetter winters (rather than being absorbed into the ground to contribute to future supplies);
- Greater loss of water as evaporation in predicted hotter summers; and
- Greater demand for water in hotter summers from people (and wildlife).

Water supply and sewerage appear to be key constraints. Water companies may be hindered from putting strategic infrastructure in place due to funding constraints, which could affect growth.

The Water Cycle Strategy did not identify any technical or environmental constraints to increasing sewerage or sewage treatment capacity. It identified that in terms of foul drainage, development northern sites (e.g. Site C) appeared to be the most favourable in terms of sewerage network improvements. Option 1 (development of sites C, D and G) would require upgrading of a significant length of the northern sewer, but there would be no impact on the southern trunk sewer.

However, the Utilities Survey, produced after the WCS, contained revised information about sewerage. Thames Water stated that they would prefer development to the south/south west of Aylesbury as the capacity here for the sewerage treatment works is greater than capacity elsewhere around the town. TW considered that it would also be cheaper and easier to install a main trunk from new development to the south of the town to the sewer.

The WCS found that the cost of sewerage for Option 2 may be offset, however, by lower water supply costs. It is suggested that water supply infrastructure needed for sites to the south and east of Aylesbury may be relatively less expensive and disruptive than those to the north.

It is **recommended** that: to cope with the proposed growth, significant investment in infrastructure is required – particularly for sewage treatment, water supply and foul drainage networks, all of which require significant upgrades to meet demand. To achieve the required growth, phasing needs to be controlled to allow infrastructure

to be put in place. These issues are likely to be addressed by the Masterplanning SPD and the updated Water Cycle Strategy.

Sources of information:

Water Cycle Strategy Feb 2007.

Utilities Survey (May 2007)

Carter Jonas SA, 2007.

Objective 8. To maintain and enhance biodiversity.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
--	<p>Site C is a comparatively even mix of arable and improved grassland and tall thick hedgerows. Two areas of rank vegetation and scattered scrub exist in the west. Land to the east of the site is dominated by improved grassland, with some semi-improved but somewhat species-poor grassland.</p> <p>Site G is largely dominated by improved and semi-improved species-poor floodplain grassland and hedgerows. Immediately to the south west of the site are Broughton Pools which are surrounded by grazed</p>	- ?	<p>Site D is approximately two thirds arable and one third improved grassland, with the improved grassland situated towards the northern end of the site. Hedgerows, many of which are associated with ditches, are present throughout.</p> <p>Site F is comprised almost entirely of agricultural land. The landscape is flat and the soil is of a heavy clay consistency. A small stream, Stoke Brook, forms the boundary between Aylesbury and the site, and a tributary of this brook bisects the site diagonally. There are also numerous ditches on site,</p>	--	<p>Site G is largely dominated by improved and semi-improved species-poor floodplain grassland and hedgerows. Immediately to the south west of the site are Broughton Pools which are surrounded by grazed meadows, in particular Broughton Meadows, an area of semi-improved species poor grassland designated as a Biological Notification Site. The Aylesbury Arm of the Grand Union Canal is located immediately south of Broughton Pools. East of the site the small lane of Stocklake borders the County Wildlife Site (CWS) known as Three Ponds Meadow.</p>

<p>meadows, in particular Broughton Meadows, an area of semi-improved species poor grassland designated as a Biological Notification Site. The Aylesbury Arm of the Grand Union Canal is located immediately south of Broughton Pools. East of the site the small lane of Stocklake borders the County Wildlife Site (CWS) known as Three Ponds Meadow.</p> <p>Site G is dominated by lowland meadow (which is lacking in sites C and D). This habitat comprises the vast majority of the area proposed for development and hence, development at this site would have a significant impact on a biodiversity action plan habitat identified as of Principal Importance in the CROW Act 2000 and subsequently, the NERC Act 2006.</p> <p>Site G abuts two BNS sites</p>	<p>most of which are accompanied by hedges and form field boundary features. These are for the most part dry. There is a partially wet ditch which runs parallel to the south-west site boundary and joins the brook that flows diagonally across the site.</p> <p>Detailed ecological surveys of Site F have shown a range of notable breeding bird species and important hedgerows. Many of the bird species would be lost if the land was developed for housing. The critically endangered arable weed Shepherds Needle was found in 2 fields. This species is a priority listed species in the UK Biodiversity Action Plan and its population should be conserved. The LDA 2007 Arable Weed Survey report discusses options for its conservation should development proceed on this site. Stoke Brook BNS (ref 81BO7) forms the north-eastern boundary of the site</p>	<p>Site G is dominated by lowland meadow (which is lacking in sites C and D). This habitat comprises the vast majority of the area proposed for development and hence, development at this site would have a significant impact on a biodiversity action plan habitat identified as of Principal Importance in the CROW Act 2000 and subsequently, the NERC Act 2006.</p> <p>Site G abuts two BNS sites and lies in an area considered to be in the top 6 sites for wintering birds in the County. Development within Site G will require improvements to the local road network which is likely to adversely impact upon Three Ponds Meadow. The pond within Three Ponds Meadow CWS is considered to be of high ecological value, (considered to be of potential SSSI status) particularly because of the aquatic invertebrate species within the pond. The rest of the site supports a diversity of terrestrial botanical species for</p>
---	--	---

<p>and lies in an area considered to be in the top 6 sites for wintering birds in the County. Development within Site G will require improvements to the local road network which is likely to adversely impact upon Three Ponds Meadow. The pond within Three Ponds Meadow CWS is considered to be of high ecological value, (considered to be of potential SSSI status) particularly because of the aquatic invertebrate species within the pond. The rest of the site supports a diversity of terrestrial botanical species for which it was originally designated. Additionally there is potential for adverse impacts on two other semi-improved grasslands that are located between Broughton Crossing and the town centre.</p> <p>Site C is likely to require a transport link across the River Thames to link the development with the A413</p>	<p>and runs for 2km, of which a third of it is within the northern part of the site. Badger setts and bat species are also present.</p> <p>Black poplar trees are present in the hedgerows around Aylesbury. The 2008 survey revealed 12 in Site D. In addition many large specimens were recorded in the 2007 survey of Site F: these could and should be retained in any development. This species is on the UK Red List (Cheffings & Farrell 2005), and is listed as a key species in the BMKBAP.</p> <p>No detailed ecological information on Site E.</p> <p>All options offer opportunities for creation of new wildlife habitats, with varying degrees of difficulty (see below).</p>	<p>which it was originally designated. Additionally there is potential for adverse impacts on two other semi-improved grasslands that are located between Broughton Crossing and the town centre.</p> <p>Site D is approximately two thirds arable and one third improved grassland, with the improved grassland situated towards the northern end of the site. Hedgerows, many of which are associated with ditches, are present throughout.</p> <p>Detailed ecological surveys of Site F have shown a range of notable breeding bird species. Many of these would be lost if the land was developed for housing.</p> <p>Black poplar trees are present in the hedgerows around Aylesbury. The 2008 survey revealed 3 trees in Site G and 12 in Site D. In addition many large specimens were recorded in the 2007 survey of Site F: these could and should</p>
---	--	--

<p>north of Aylesbury. This watercourse acts as a major wildlife corridor in the area and mitigation measures will need to address severance and fragmentation impacts.</p> <p>Sites C and G have a number of known badger setts and translocation of existing setts may be problematic due to nature of surrounding land (already occupied by badgers).</p> <p>Site D is approximately two thirds arable and one third improved grassland, with the improved grassland situated towards the northern end of the site. Hedgerows, many of which are associated with ditches, are present throughout.</p> <p>Black poplar trees are present in the hedgerows around Aylesbury. The 2008 survey revealed 3 trees in Site G, 12 in Site D and 16 in Site C: these could and</p>		<p>be retained in any development. This species is on the UK Red List (Cheffings & Farrell 2005), and is listed as a key species in the BMKBAP.</p> <p>All options offer opportunities for creation of new wildlife habitats, with varying degrees of difficulty (see below).</p>
--	--	---

	<p>should be retained in any development. This species is on the UK Red List (Cheffings & Farrell 2005), and is listed as a key species in the BMKBAP.</p> <p>Bats are present in Sites C, G and D – with Sites C and G providing better habitat and holding greater number of species (especially linked to water habitats). Sites C and (particularly) G are used by great crested newts.</p> <p>All options offer opportunities for creation of new wildlife habitats, with varying degrees of difficulty (see below).</p>				
--	---	--	--	--	--

Conclusions and summary:

The growth options have been subject to various ecological surveys of varied detail. The ecological surveys undertaken as part of the 2006 Environmental Character Assessment cover all land around Aylesbury and therefore cover all the growth sites. This was a desk top study and Phase 1 Habitat Survey and recommended more detailed (Phase 2) survey for a number of areas should they be subject to LDF options testing. The summary report concluded that *'the area around Broughton [Site G] and Eythrope [outside of the growth options] have the greatest concentrations of ecological interest'*.

Subsequently, all of the major development areas with the exception of Site E have been subject to more detailed ecological survey.

From this more detailed work there appears to be a range of ecological interest across the major development sites, with Site G appearing the richest and Site D perhaps the poorest. Site F appears the second richest due to its array of resident bird species, whilst Site C has some limited value. *However, there is currently no detailed information on Site E to make a comparable judgement.*

Site G appears to be of considerable value for bird species, with the 2008 Ecological Assessment commenting; *"In contrast [to sites C and D] Broughton Crossing is of exceptional value for birds, and is rated as one of the top six sites for birds within the county. The lowland meadows within and around the site provide excellent quality habitat for a diversity of bird species"*.

Therefore Site G is significant in ecological terms. It is ranked as being in the top 6 sites for birds in the County and is regionally important in terms of a breeding, passage and overwintering resource. Its composition of lowland meadow/ grassland of varying quality, strong hedgerow network and numerous waterbodies creates a habitat matrix of considerable importance, greater than the sum of its parts. The connectivity to the wider environment provided by the canal and its environs further add to the ecological significance and sensitivity of the site. The compensation required to achieve no net loss to biodiversity and offset the inevitable negative impacts of development in the area, is likely to involve a considerable offsite land purchase in very precise locations and major habitat creation with precise ongoing management agreements.

The AVDLP Inspector's Report acknowledged the ['Aylesbury East'] area's intrinsically high ecological value and concluded that *"...development of this area would result in serious damage to, and the possible destruction of, its most valuable habitats, and significant harm to its overall ecological value...mitigation would be inadequate against this loss."*

Mitigation

The main value of the Southern Growth Arc sites (D, E and F) is primarily in their hedgerow networks, which support an array of breeding bird species as well as black poplar trees and bats. By retaining a network of rich hedgerows as a 'green grid' for development, a degree of mitigation for these sites could be included within the surveyed area. However, even adopting such an approach, it is likely that some of the breeding/ resident bird and bat species recorded at Site F would disappear either from disturbance (barn owl, grasshopper warbler, skylark) or habitat loss (skylark, meadow pipit). Therefore it is not clear that a net gain to the biodiversity value of the site (as required by PPS9) would be achievable across the whole of the Southern Growth Arc. However, it is possible that

such a net gain could be achieved for individual sites, particularly Site D.

Site C is a little more complicated because of its slightly greater ecological interest. Whilst the arable areas have limited interest, greater compensation will be required to achieve no net loss to biodiversity in the grassland areas. This compensation and mitigation is likely to involve additional land purchase and ongoing management agreements.

The 2008 ecological assessment states that adequate mitigation/ compensatory measures for Site G would be difficult and challenging:

“Mitigation to offset impacts to bird species through development within Broughton Crossing would be difficult to achieve and expensive, with much of the site close to the Pools and canal needing to be left as a buffer zone to offset impacts. Despite incorporation of buffer zones the levels of disturbance associated with human activities, their pets and lighting impacts are likely to have a significant adverse impact on bird interest. Additional land purchase primarily for ecological mitigation would be required. Large ponds would need to be created to provide equivalent habitat. Adequate mitigation is likely to require the conversion of large arable fields to floodplain meadow and incorporation of features such as water bodies, wet scrapes, species-rich hedgerows and ditches. The mitigation site will need to be adjacent to the canal in order to provide a similar quality linear corridor of high quality habitat. The connectivity of the pools to such a corridor is a contributory factor to the value of the site for so many bird species, especially over wintering and migrant populations, using the canal as a habitat of high quality and as a navigation aid.

Section 106 agreements will be required for the long term management of a compensation site offered as mitigation for the loss of existing bird interest. Compensation measures generally need to offer an enhanced habitat in terms of quality or area compared with that which is lost. The general principle of two for one should be applied when replacing habitat. The reasoning behind this concept is that the acceptability of newly created habitat is not entirely predictable and measures need to go as far as possible to ensure acceptability to the target species. Compensation of this type should be in place before development starts, to reduce the likelihood of displacement of species”.

This should also be viewed in light of the comments made under Objective 9 relating to green infrastructure. Large areas of open grassland around Site G have been identified for future green infrastructure. Should such land have public access then it is unlikely that the current bird interest would be maintained.

It is **recommended** that:

- Comparable detailed ecological surveys are undertaken for Site E.
- Mitigation should include the retention of important features within the development itself (as a 'green grid'), e.g. the important hedgerows within the southern growth arc.
- Masterplanning and other future work should seek to address the issue of balancing the need for future green infrastructure, public access to green infrastructure and the maintenance of current and future ecological value, particularly bird interest.

Sources of information:

Ecological Assessment of LDF Options, Jacobs Babbie 2008.

Aylesbury Vale Environmental Character Assessment for Aylesbury, Ecological Studies, Jacobs Babbie, 2006.

Information provided by AVDC Biodiversity Officer

South Aylesbury Ecological Surveys, LDA, Sept 2007 (for Site F).

Objective 9. To maintain and enhance provision of and access to green infrastructure.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
- ?	For Site C provision of green infrastructure is currently insufficient. Sites to the north of Aylesbury are not within the catchment for green infrastructure of 2ha, 20ha or 100ha. Site G has opportunities to create a new green infrastructure, including a GI corridor focused on the Aylesbury Arm of the Grand Union Canal. However,	+	D, E, F have opportunity to provide a high-quality setting for sustainable public transport and cycle routes access links between the town and the larger areas of accessible greenspaces on the Chilterns escarpment. Sites D and E are within 5km catchment of accessible green infrastructure of over 100	+	Site G has opportunities to create a new green infrastructure, including a GI corridor focused on the Aylesbury Arm of the Grand Union Canal. However, provision of new GI around Site G could have negative impact on existing ecology: equally, it could provide positive enhancement opportunities. Sites D and E are within 5km

	<p>provision of new GI around Site G could have negative impact on existing ecology: equally, it could provide positive enhancement opportunities.</p> <p>Site D within 5km catchment of accessible green infrastructure of over 100 ha: Site G borderline and Site C outside. All sites outside of catchments for 'over 20ha' and 'over 500ha' accessible sites.</p> <p>Site D has opportunity to provide a high-quality setting for sustainable public transport and cycle routes access links between the town and the larger areas of accessible greenspaces on the Chilterns escarpment.</p> <p>Open space provision: Local open space would have to be provided within all 3 sites.</p>	<p>ha; Site F is outside. All sites outside of catchments for 'over 20ha' and 'over 500ha' accessible sites.</p> <p>Open space provision Local open space would have to be provided within all 3 sites, though Site D – could co-locate with Bedgrove Park.</p>	<p>catchment of accessible green infrastructure of over 100 ha: Site G borderline and Sites C and F outside. All sites outside of catchments for 'over 20ha' and 'over 500ha' accessible sites.</p> <p>Sites D, E, F have opportunity to provide a high-quality setting for sustainable public transport and cycle routes access links between the town and the larger areas of accessible greenspaces on the Chilterns escarpment.</p> <p>Open space provision Local open space would have to be provided within all 4 sites, though Site D – could co-locate with Bedgrove Park.</p>
<p>Conclusions and summary:</p> <p>The Bucks Green Infrastructure Strategy (Draft 2008) predicts that <i>'projected high levels of growth in and around</i></p>			

Buckinghamshire will put increasing pressure on existing Green Infrastructure assets in the County, many of which are already under pressure. If poorly managed, the level and speed of growth proposed in the sub-region is likely to have significant implications for biodiversity, landscape and historic environment and may reduce the ability of the natural environment to adapt to climatic change. The Strategy uses the Accessible Natural Greenspace Standard (ANGSt) drawn up by Natural England and the Forestry Commission and supported by national government⁵, although it recognises that its use at a local/ District, on its own, is not sufficient for Green Space analysis and must be used along with other measures of assessment useful and appropriate to local provision and needs. Aylesbury town currently scores poorly in terms of meeting ANGSt requirements with 69% of households meeting none of the requirements. The Strategy maps indicate that in relation to the growth options, Sites E and D are the only development sites within the catchment of strategic green infrastructure (they lie within the 5km catchment of the 100ha category of GI located to the south, the Chilterns). Site G appears borderline for this catchment (though probably just outside).

Therefore, whilst all options are likely to need new green infrastructure to address current deficits and provide for new population, Option 2 has a better existing provision, followed by Option 3 and Option 1 the poorest:
Option 1 – 37% fall within 5km catchment of GI of over 100ha (excluding Site G which appears to be just outside of the catchment);
Option 2 – 65%
Option 3 – 47%

The Strategy discusses opportunities for creating and enhancing green infrastructure. It states that *'in order to meet the needs of current and future populations of Aylesbury there needs to be a focus on creating and enhancing strategic green access links, corridors and paths that link the town with the wider vale and provide necessary links to allow sustainable access to sub-regionally important areas such as Bernwood Forest and Chiltern Hills. A sub-project could provide an enhancement of the Aylesbury and Wendover arms and topaths of the Grand Union Canal, meeting priorities identified for developing linkages between Aylesbury, Leighton-Linslade, Wendover and Milton*

⁵ The ANGSt model states:

No person should live more than 300 metres from their nearest area of natural greenspace of at least 2 hectares in size (and at least 2ha of accessible natural greenspace per 1000 population).

There should be at least one accessible 20-hectare site within 2 kilometres of home.

There should be one accessible 100-hectare site within 5 kilometres of home.

There should be one accessible 500-hectare site within 10 kilometres of home.

Keynes'

It also states that opportunities also exist for enhancement of the urban-edge landscapes around the eastern fringe of Aylesbury through creation of a strong framework of trees and woodlands that could incorporate opportunities for sport/formal recreational facilities connected to Aylesbury by multi-purpose greenways. However, such habitat creation would need to be balanced with existing ecological value particularly the wet meadows and bird interest contained in the open damp areas.

In terms of Aylesbury's Southern Fringes the draft Strategy states that 'opportunities exist to retain and enhance the identity of the separate villages of Bishopstone, Stoke Mandeville and Western Turville, through the provision of a strong framework of trees, woodlands and grasslands to buffer and enhance the urban-edge landscapes around the southern fringe of Aylesbury. This would provide a high quality setting for sustainable public transport and cycle route access links between the town and the larger areas of accessible greenspaces on the Chilterns escarpment. The existing 'Aylesbury Linear Park' is less well developed to the south of the town and would also benefit from an increase in green space. Enhancement of Wendover Woods (Countryside Access Gateway (G3)) would serve the recreational needs of Buckinghamshire and the expanded Aylesbury population and address the current greenspace deficiencies across the district. This could be based on connectivity between Wendover Woods (Forestry Commission), Bacombe Hill (Bucks CC) and Coombe Hill (National Trust) and would meet district ANGSt requirements for the provision of 500 ha of strategic Green Infrastructure for Buckinghamshire as a whole. Any new development within the area must be provided with extensive green space within walking distance of resident's homes. This will help to reduce the visitor pressure on sensitive sites along the Chilterns escarpment, many of which have sensitivities due to its designations related to nature conservation and archaeological interest'.

Proposed strategic green infrastructure is shown on the growth option maps (see Annex 2). It is uncertain how deliverable such new green infrastructure will be (e.g. given this is likely to be a low priority and could depend on prevailing economic situation).

Some areas of land currently depicted as future green infrastructure has existing ecological value, especially land around Site G, Broughton Crossing. Formalising this as publically accessible green infrastructure could have negative impacts on biodiversity (see objective 8 above).

It is unclear whether the growth option maps show already planned infrastructure which is in the BCC green infrastructure plan.

Existing GI sites (e.g. the Chilterns) will be put under greater pressure with the amount of development proposed: it is currently unclear how much capacity they may have to absorb additional visits. Provision of greenspace within new development sites (within walking distance of new homes) will help to alleviate pressure on any particularly sensitive parts of the Chilterns.

Recommendation: All options offer potential to create and expand on existing open space and help improve provision of, and access to green infrastructure. The Bucks GI Strategy (Draft 2008) provides guidance on such opportunities. Provision of larger open spaces may be preferable to several small and provision of a green buffer between existing and new housing would be desirable.

Strategic open space is provided by the Chilterns/ Wendover Woods (more accessible to southern growth sites: northern sites e.g. Site C out of catchment) but access would need to be improved and any sensitivities regarding biodiversity/ archaeological interest managed. Improved access to Grand Union Canal Triangle would be beneficial.

Further work is needed to look at how green infrastructure could be provided in a way that maintains and improves existing ecological value of affected land.

Sources of information:

Bucks Green Infrastructure Strategy (Draft 2008)

Towards a Strategic Framework for Green Infrastructure in Buckinghamshire' (May 2007)

Objective 10. To conserve and enhance the landscape and townscape character of Aylesbury Vale and protect designated and undesignated assets.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
-	No areas of designated landscape or historical importance. Site C consists of	-	No areas of designated landscape or historical importance. Sites D, E and F are mostly	-	No areas of designated landscape or historical importance. Site G consists of Landscape

<p>Landscape Character categories 3 and 4 (the latter around Bierton Ridge). Site G consists of Landscape Character category 3.</p> <p>Site C falls within Historical Environmental Character Assessment category 2.</p> <p>Site G falls within category 3. However, the AVDLP Inspector's Report concluded that this area [to the east of Aylesbury] comprises an illogical intrusion of built development into the open countryside.</p>	<p>Landscape Character category 3 (small parts of D are as low as 2).</p> <p>Sites D, E and F falls within Historical Environmental Character Assessment categories 2 and 3 (site E borders a small area of category 6).</p>	<p>Character category 3. However, the AVDLP Inspector's Report concluded that this area [to the east of Aylesbury] comprises an illogical intrusion of built development into the open countryside.</p> <p>Sites D, E and F falls within Historical Environmental Character Assessment categories 2 and 3 (site E borders a small area of category 6). Site G falls within category 3.</p>
--	--	--

Conclusions and summary:

None of the three options contain any designated areas of landscape or historical importance. Option 1 would affect land of landscape character category 4 around Bierton Ridge. The Southern growth sites (D, E and F) are generally poorer in terms of landscape character (categories 2 and 3). The historical character of the land is similar for all 3 growth options.

The October 2008 Landscape Impact Assessment summary notes rank the options in terms of their landscape and visual impact. This concludes that development of Option 1 would have the greatest visual impact, and development at Option 2 would have the least visual impact (includes the importance of the landscape or element, its capacity to accommodate change, the nature and scale of magnitude of the impact and consideration of any mitigation measures). The scores for Option 3 are complicated by it having 4 development sites rather than 3: however it has a slightly worse score than Option 1 using an average of the 4 sites. In terms of visual impact, again development at Option 2 would have the least visual impact, followed by Option 3 and Option 1 (which would have

the greatest). Overall, the summary notes conclude that development of Option1 would have the greatest combined visual and landscape impact. Options 2 and 3 would have less impact. Option1 would have the least impact.

All options have been scored as having minor negative impact in terms of developing greenfield land of some landscape, visual and historical value.

It is **recommended**

Sources of information:

Aylesbury Vale Environmental Character Assessment, Jacobs Babbie, May 2006.

Landscape Character Assessment, May 2008.

Objective 11. To reduce contributions to climate change through: (a) Sustainable building practices; (b) Maximising the potential for renewable energy and energy conservation; and (c) reducing greenhouse gases.

Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
--	The transport modelling predicts a 36% increase in car journeys from 2005 and significant increases in congestion. This will translate into significant increases in greenhouse gas emissions. (see conclusions below)	--	The transport modelling predicts a slightly lower 34% increase in car journeys from 2005 and significant increases in congestion. This will translate into significant increases in greenhouse gas emissions. (see conclusions below)	--	The transport modelling predicts a similar increase in car journeys to option 2 compared to 2005 and significant increases in congestion. This will translate into significant increases in greenhouse gas emissions. (see conclusions below)

Conclusions and summary:

The only differences between the three growth options arise from the location of development, since the three growth options will all result in the same number of buildings. The most significant way in which location impacts greenhouse gas emissions is through transport. Transport modelling for all options predicts significant increases for

car journeys and congestion from 2005 to 2026. This will translate into significant increases in greenhouse gas emissions.

As discussed under objective 6, there are some differences in transport efficiency between the options. It may be that the efficiency results do reflect differences in greenhouse gas emissions. However, these impacts have not been modelled for the growth options.

It is **recommended** that to inform the decision making process, the greenhouse gas emissions of the four options be modelled.

Sources of information:
Aylesbury Land Use Transport Strategy (ALUTS) LDF Technical Note 4, Halcrow Group, 29 August 2008 ('TN4 paper')
ALUTS Summary Stats (provided by Buckinghamshire County Council)

Objective 12. To reduce the amount of waste going to landfill sites by reducing the amount of waste produced, re-using or recovering it through recycling, composting or energy recovery.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
--	Growth will increase the total amount of waste produced. New additional waste collection and management options common to all options.	--	Growth will increase the total amount of waste produced. New additional waste collection and management options common to all options.	--	Growth will increase the total amount of waste produced. New additional waste collection and management options common to all options.
<p>Conclusions and summary: Such significant growth will increase the total amount of waste produced. Over time, various initiatives by the Council and others will mean that recycling and reuse rates and composting will gradually increase.</p> <p>Sources of information:</p>					

Up dated infrastructure schedules for the three growth arcs, supplied by AVDC Sept 08.

Objective 13. To improve the efficiency of land use through the re-use of existing buildings & developing on previously developed land (PDL).					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
--	On greenfield land.	--	On greenfield land.	--	On greenfield land.
<p>Conclusions and summary: All 3 growth options will result in loss of a significant amount of greenfield land.</p> <p>Sources of information:</p>					

Objective 14. To minimise the risk of flooding in relation to both new and existing development.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
- ?	<p>SFRA April 2007: Development not located in flood zones 2 or 3 (River Thame on northern boundary of Site C is zone 3).</p> <p>The AVDLP Inspector's Report, in considering 1600 dwellings in the area of Site G (which included detailed flood mitigation measures), acknowledged that the site "...lies at the heart of a complex drainage system in the</p>	+?	<p>SFRA April 2007: Development not located in flood zones 2 or 3.</p>	- ?	<p>SFRA April 2007: Development not located in flood zones 2 or 3.</p> <p>The AVDLP Inspector's Report, in considering 1600 dwellings in the area of Site G (which included detailed flood mitigation measures), acknowledged that the site "...lies at the heart of a complex drainage system in the most sensitive location in</p>

<p><i>most sensitive location in terms of drainage and flood prevention.” He considered the drainage proposals as “technically suspect, environmentally inappropriate, paying scant regard to ecological consequences”, thereby doubting the acceptability of any essential flood mitigation measures and the viability of development in this area.</i></p>		<p><i>terms of drainage and flood prevention.” He considered the drainage proposals as “technically suspect, environmentally inappropriate, paying scant regard to ecological consequences”, thereby doubting the acceptability of any essential flood mitigation measures and the viability of development in this area.</i></p>
--	--	---

Conclusions

The Strategic Flood Risk Assessment (April 2007) states that development to the north (i.e. including Site C) drains direct to the River Thame, thereby not increasing flood risk to the town.

With regard to surface water management, for the proposed growth sites located at the northern side of Aylesbury, the geological formation mostly consists of Kimmeridge Clay. Soil is formed with fine loamy over clayey type with slow permeability and seasonal water logging. Therefore, the low permeability of the soil may increase runoff volumes from these sites to some extent when developed unless stringent allowable runoff rates are imposed through a combination of source control and strategic SUDS measures to attenuate flows.

On the other hand, a beneficial factor of northern growth sites (including C) is that they have the advantage of having relatively flood risk free River Thame which can bypass additional runoff volume from these sites entering the problematic watercourses in the town such as Bear Brook and its small heavily urbanised tributaries. Halcrow’s Water Cycle Study report (dated February 2007) also confirms that northern sites can result in a lesser flood impact on the receiving watercourses compared with southern sites according to their preliminary development runoff impact calculations. It should be noted, however, that both northern and southern sites will require strategic flood storage incorporating SUDS at a site level. This report also has identified possible locations for strategic flood storage, which need further investigation through a Level 2 SFRA.

Site G is mostly on clay, with some gault. Sites D and E mostly Gault geology. Site F a mix of various geology inc Purbeck, Portland, and lower greensand. Site G may provide an opportunity to provide additional strategic flood storage if Bear Brook is partially diverted to River Thame north of GUC Aylesbury Arm via Burcott Brook. This will prevent excessive flood water entering the constricted channels of the Bear Brook through the built-up areas of Aylesbury town.

However, the AVDLP Inspector's Report, in considering 1600 dwellings in the area of Site G (which included detailed flood mitigation measures), acknowledged that the site "...lies at the heart of a complex drainage system in the most sensitive location in terms of drainage and flood prevention." He considered the drainage proposals as "technically suspect, environmentally inappropriate, paying scant regard to ecological consequences", thereby doubting the acceptability of any essential flood mitigation measures and the viability of development in this area.

Two places have been identified as at potential risk of flooding in 'Grand Union Canal/Upper Thame Flood Study Report, PBA, April 1998. The GUC Aylesbury Arm is subject to overtopping, particularly along the two mile pound between College Road and Broughton Road. This flooding mainly affects agricultural land at present, but it may affect any future development in this area. Another flooding also occurs between Broughton Lane and Oakfield Road due to canal seepage.

There may be opportunities to enhance/ supplement the flood storage already provided by AVFAS through the careful intervention and planning of growth sites (e.g. site D and Aston Clinton Road MDA). Sites E and F may also provide opportunities for reducing flood risk in Stoke Brook and downstream reaches of the Bear Brook if ground conditions encourages infiltration runoff and extra land for strategic flood management can be made available through the development planning process to overcompensate the runoff generating from these growth sites. Nevertheless, such opportunities should be further explored through a more detailed Level 2 SFRA as it is beyond the scope of this Level 1 SFRA.

The majority of southern side of Aylesbury is Gault formation with mudstone and pebbles. Fine loamy calcareous soils over chalky gravel affected by groundwater have moderate permeability. This would allow a moderate infiltration into surface soils. Development sites located in this part may be suitable for application of SUDS that encourage infiltration to underlying ground. The examples of such techniques include soakaways, swales, permeable pavements and infiltration basins. For both northern and southern sites, further ground investigation will be required to determine the likely infiltration rates and confirm the choice of SUDS techniques. The runoff management from any site within the Vale District must be agreed with the Environment Agency, AVDC, Bedford

Group of IDB and statutory water undertakers following the requirements stipulated in PPS25. This will involve the effective use of SUDS limiting the allowable runoff rates from the development sites to predefined maximum runoff rates.

Both northern and southern sites will require strategic flood storage incorporating SUDS at a site level. The SFRA report also identified possible locations for strategic flood storage, which need further investigation through a Level 2 SFRA.

Water Cycle Strategy Feb 2007 (note – this didn't include Site G). Largest proportional impact for run-off was for sites D, E and F, with Stoke Brook increasing by 50%. This couldn't be absorbed by the Brook – would require attenuation or improvements. Site D results in 13-19% increase in volume delivered to Bear Brook flood storage area. Run off from northern sites, including C, lowest proportional impact due to larger size of R.Thame as a receiving watercourse.

Summary:

According to the preliminary desktop study it appears that southern part of Aylesbury has more permeable soils than the northern part and therefore can encourage infiltration through SUDS. However, site investigation and infiltration tests will be needed to clarify the permeability of soil. With careful planning and intervention southern growth sites may also provide opportunities to reduce flood risk in Aylesbury by enhancing the protection currently provided by the AVFAS. However, further detailed studies will be required to fully confirm this. However, northern growth sites have the advantage of having relatively flood risk free River Thame which can bypass additional runoff volume from these sites entering the problematic watercourses in the town such as Bear Brook and its small heavily urbanised tributaries. PBA's detailed model results for Aylesbury are not available to accurately establish the channel capacities or areas benefiting from the existing AVFAS. Therefore, a precautionary as well as a strategic approach to flood risk management in Aylesbury and the rest of the Vale District is needed when making development planning decisions in the absence of detailed model results. PPS25 also recommends for using such an approach to manage flood risk in particular to deal with uncertainty over climate change and residual flood risk.

All growth sites can increase flood risk on the receiving watercourses (in particular for the Bear Brook and the River Thame) unless the additional runoff from the future development is adequately managed. These watercourses have been subjected to frequent flooding in the past.

All new growth sites will be located purely in Flood Zone 1.

The Environment Agency considers that the standard of protection provided by the AVFAS is currently less than 1 in 100 years. Therefore, the protection provided by the implemented works within Aylesbury town would further decrease if the existing flood storage and channel capacity is gradually utilised by the additional uncontrolled surface water runoff (rates and volumes) from the growth sites together with the adverse impact of the prospective climate change. However, there may be opportunities to enhance/ supplement the flood storage already provided by AVFAS through the careful intervention and planning of growth sites (e.g. site D and Aston Clinton Road MDA). Also site G may provide an opportunity to provide additional strategic flood storage if Bear Brook is partially diverted to River Thame north of GUC Aylesbury Arm via Burcott Brook. This will prevent excessive flood water entering the constricted channels of the Bear Brook through the built-up areas of Aylesbury town. Sites E and F may also provide opportunities for reducing flood risk in Stoke Brook and downstream reaches of the Bear Brook if ground conditions encourages infiltration runoff and extra land for strategic flood management can be made available through the development planning process to overcompensate the runoff generating from these growth sites. Nevertheless, such opportunities are being further explored through a more detailed Level 2 SFRA as it is beyond the scope of this Level 1 SFRA.

The AVDLP Inspector's report casts doubt upon the acceptability of any essential flood mitigation measures and the viability of development in the vicinity of Site G.

It is **recommended** that:

Consideration is given to the findings of the Stage 2 Strategic Flood Risk Assessment, due January 2009. Future masterplanning and the further development of the Core Strategy will need to address issues relating to the acceptability of flood mitigation measures and the viability of new development proposed.

Sources of information:

Level 1 Strategic Flood Risk Assessment (April 2007)

Phase 1 Water Cycle Strategy (February 2007)

Utilities Survey (May 2007)

Objective 15. To positively attract business to the district whilst allowing for the retention and expansion of existing local businesses.

Option 1 East	Option 2 South	Option 3 Hybrid
---------------	----------------	-----------------

Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
+?	<p>Site C: <i>"The Federation of Small Businesses preferred the northern sector to the southern"</i>. Carter Jonas June 2007.</p> <p>Site G: <i>"Consultees did not express a preference for locating employment development to the east of Aylesbury"</i>. Carter Jonas June 2007.</p> <p>Site D. <i>"Consultees that submitted responses to the initial issues and options consultation, including SEEDA, generally supported the southern/ south western and south eastern areas around Aylesbury, particularly close to the Aston Clinton Road MDA"</i>. Carter Jonas June 2007.</p>	+	<p><i>"Consultees that submitted responses to the initial issues and options consultation, including SEEDA, generally supported the southern/ south western and south eastern areas around Aylesbury, particularly close to the Aston Clinton Road MDA"</i>. Carter Jonas June 2007.</p>	+?	<p>Sites D, E, F: <i>"Consultees that submitted responses to the initial issues and options consultation, including SEEDA, generally supported the southern/ south western and south eastern areas around Aylesbury, particularly close to the Aston Clinton Road MDA"</i>. Carter Jonas June 2007.</p> <p>Site G: <i>"Consultees did not express a preference for locating employment development to the east of Aylesbury"</i>. Carter Jonas June 2007.</p>
<p>Conclusions and summary: Although some sectors of the county's economy are under pressure e.g. some jobs are being moved abroad ('off-shoring'), the numbers of people in employment are expected to rise. The level of increase is again split between the three southern districts and Aylesbury Vale (part of the MKSM): about 13% increase in the south and 26% in Aylesbury Vale. The issue was debated in detail at the RSS's Examination in Public, and the Panel advised that in</p>					

Aylesbury Vale District a ratio of one new job to one new home was appropriate, considering jobs growth without a subsequent increase in housing supply to be unrealistic in the growth area. (SHMA July 08).

It is not clear that there is a significant difference between the growth options in terms of employment provision. In all growth options, new employment areas will be concentrated in the Aston Clinton Road area, and it is understood that there is not likely to be a difference in the amount of employment provided with each options. There may be some differences in accessibility to employment between the options, but as noted under objective 3 this has not yet been modelled.

Sources of information:
Strategic Housing Market Assessment July 2008.
Carter Jonas SA June 2007.

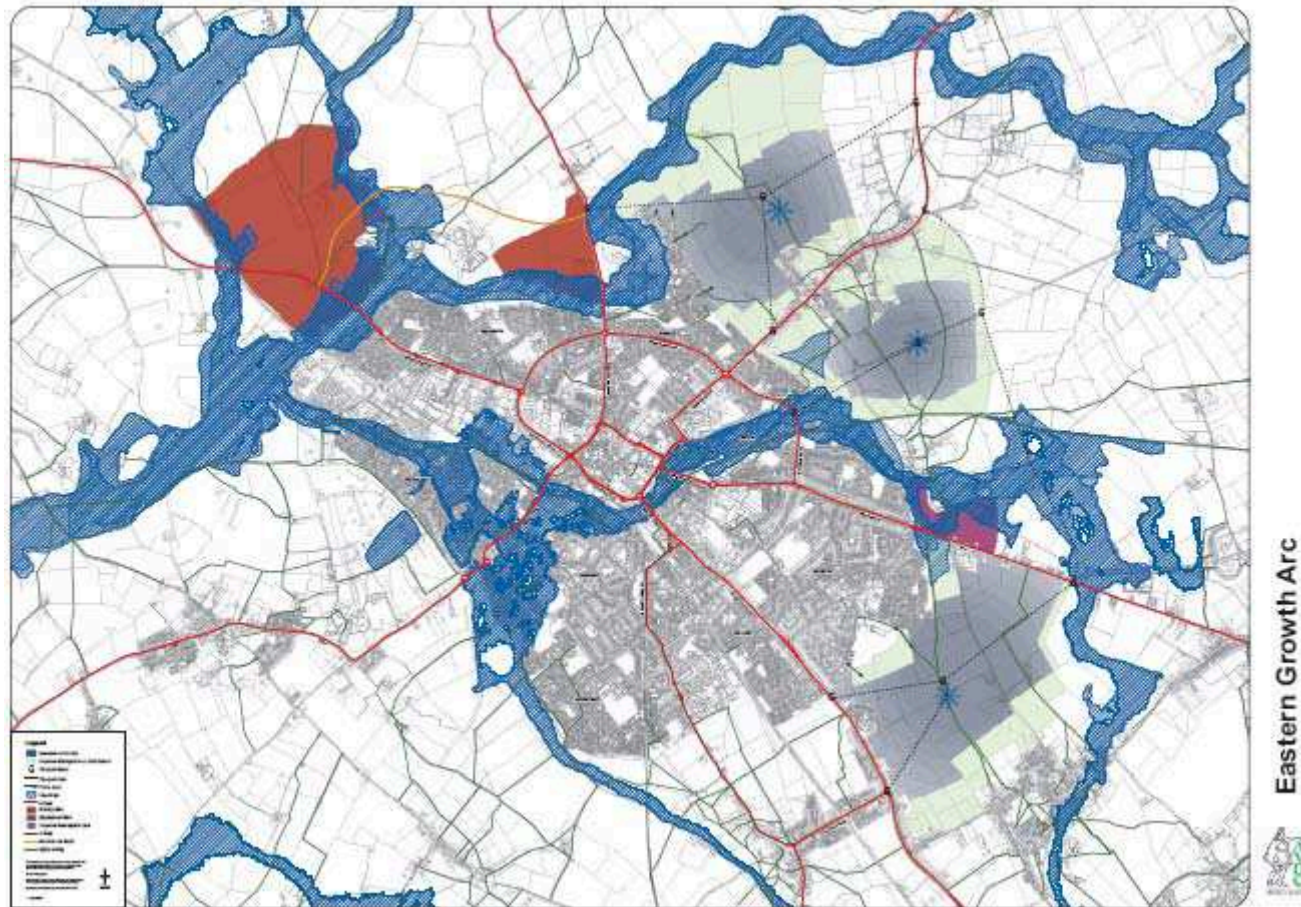
Objective 16. To encourage a diverse economy which is focused on higher value added, lower impact activities.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
0		0		0	
Conclusions and summary: No significant impact arising from land allocation choices.					
Sources of information:					

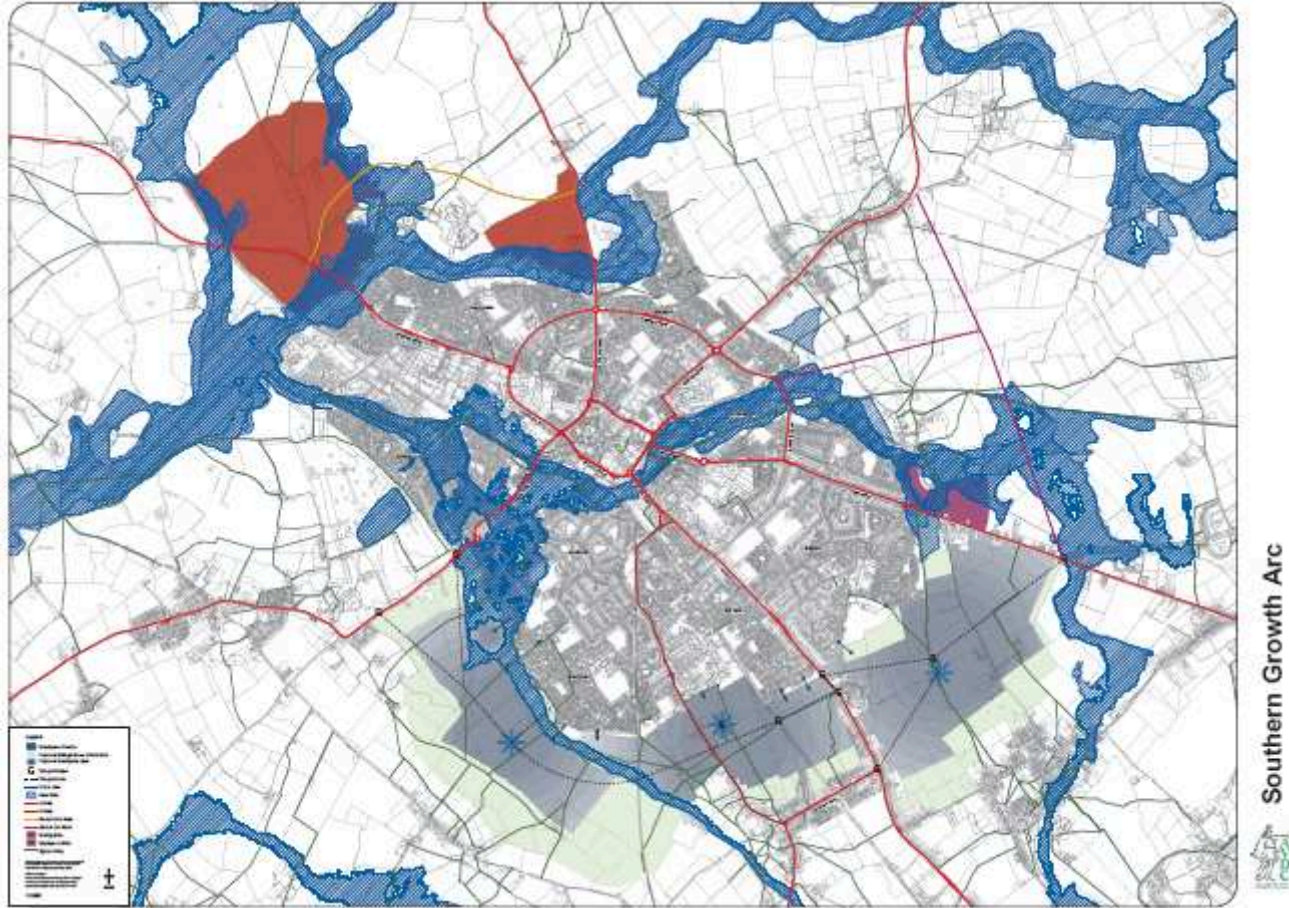
Objective 17. To develop and maintain a skilled workforce which matches the needs of existing and future businesses.					
Option 1 East		Option 2 South		Option 3 Hybrid	
Score	Commentary/ explanation	Score	Commentary/ explanation	Score	Commentary/ explanation
0		0		0	
Conclusions and summary: No significant impact arising from land allocation choices					

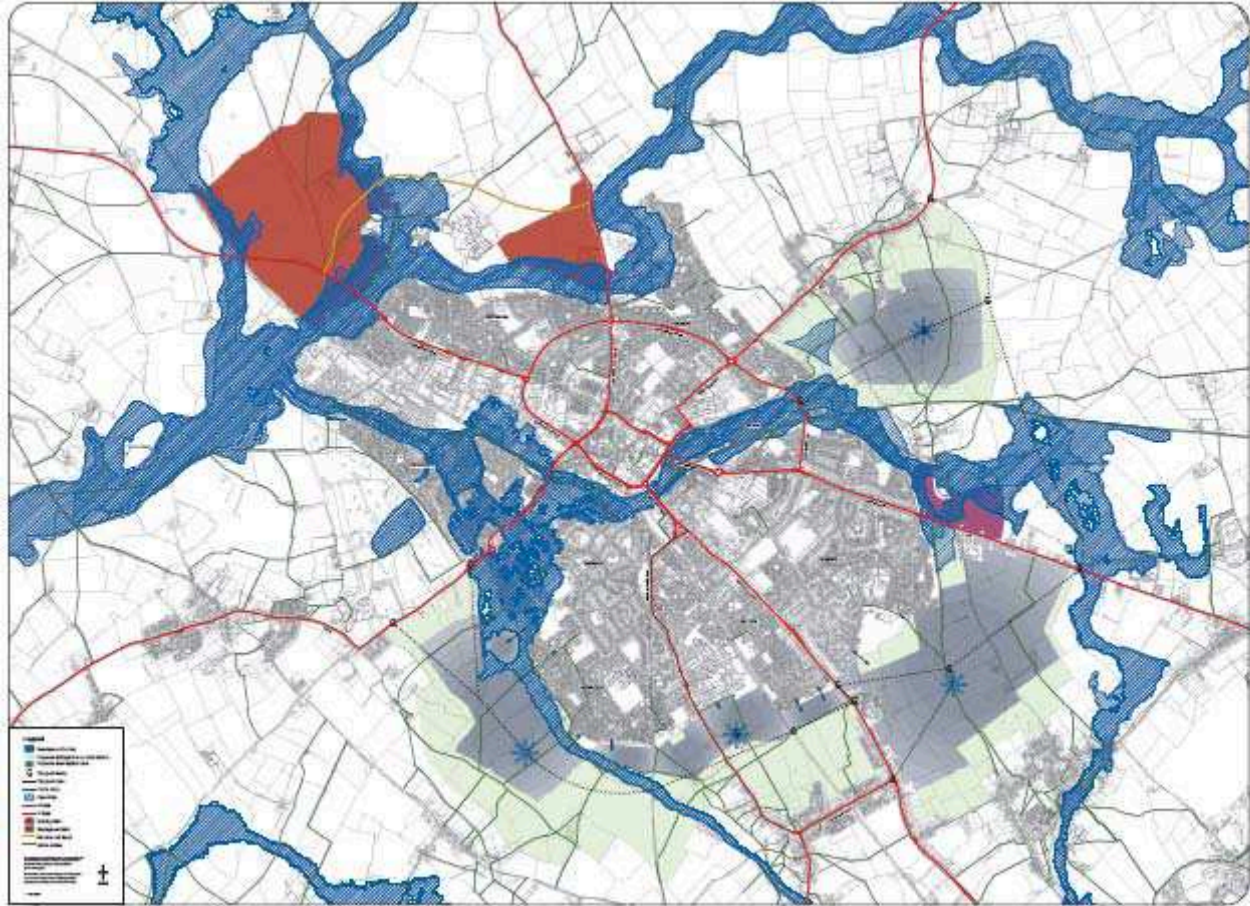
Sources of information:

Annex 2. Maps showing the three options

Please note: The maps below have been used as part of this SA. However, these maps have been revised and more up to date maps will accompany the public consultation.







 East and Southern Growth Arc

Annex 3.

Outcomes of SA workshop held at Civic Centre, Aylesbury on 24th September 2008.

1. Comments on SA Objectives and proposed revisions

Transport <ul style="list-style-type: none">• Need to travel: should add "by private car"• Add "promote sustainable means of travel"	Landscape <p>Add "protect designated and undesignated assets"</p>
Housing <ul style="list-style-type: none">• Include affordability	Green infrastructure <ul style="list-style-type: none">• Should be included as an objective <p>Long term maintenance is an important issue</p>
Climate change <ul style="list-style-type: none">• Loss of carbon sinks from land use changes is an issue	Tourism <ul style="list-style-type: none">• Is it sustainable?• Link to green infrastructure• Should be removed altogether• Reword to say "minimise the negative impacts of tourism by promoting sustainable tourism."

2. Comments on key issues

i) Deliverability

There was a discussion on whether the SA should take account of deliverability. It was considered that the answer depends on what deliverability means. However, it was agreed that there may be some elements of delivery which need to be considered within the SA process. It was commented that one has to assume that the options are realistic. It was also commented that in development it is important that the key principles of a project are delivered.

ii) Flooding

Awaiting SFRA 2.

iii) Ecology/ biodiversity

- Visitors to internationally important sites in the Chilterns will have impacts on these sites. But these impacts will have been appraised at RSS level;
- Need to consider local green infrastructure to mitigate impacts on the Chilterns: but this won't stop people going there;
- What about a "green infrastructure pot" to mitigate growth impacts on Chilterns?;
- Need to improve local green infrastructure; and
- Projected traffic increases are likely to result in increased travel through AONB. Modelling assumes success in delivering 1 job/house. What if this doesn't happen?

3. Comments on the three growth options

1. Eastern growth arc

Sport and recreation	Need to consider informal recreation: good access in this option, including canals, which have opportunities for improvement.
	However, other options will be more accessible to existing facilities, which could be expanded (though may not be able to accommodate all). For the eastern option, new facilities would be required (or more travel to facilities in the south).
Ecology	Greater ecological impact of this option. There is a clear ecological difference between the value of the land at Broughton and other sites.
	Development of Broughton sites can be mitigated, but this requires additional land.
	Broughton in top 6 sites for wintering birds: well studied, evidence in recent info. Need to check that there is evidence of importance and non-replaceability.
Green infrastructure (Many of these points relate to all options)	How deliverable is it?
	The area defined as green infrastructure will be publicly accessible. Some of this is currently managed grassland that is not publicly accessible: when accessible will be hard to keep the same ecological quality.
	Maps don't include already planned infrastructure which is in the BCC green infrastructure plan.
	All options will need green infrastructure to address deficits and provide new.
	How is the requirement calculated?
	Existing sites will be put under greater pressure: how much capacity to absorb additional visits?

Transport	Modelling shows that the Eastern option performs best for time and costs but not as well connected: difficult to make connections between new development and Watermead.
Flooding	Final information not yet available
	Broughton the only site where flooding has been identified as an issue
Coalescence	Not clear whether it is good to be standalone or connected. There are examples of the benefits of both.
2. Southern growth arc	
Green infrastructure	Need to give greater priority to green infrastructure in all options: why is there more in Milton Keynes?
	Not enough 106 money for maintenance, but there are other models, eg trusts.
	Site D has least green infrastructure (relates to all options) because of availability of land.
Ecology	Existing ecology is less important, there are opportunities to create corridors, and other ecological enhancements. Can integrate green infrastructure
Transport	Modelling shows this option performs best for distance travelled and sustainable modes. Also more opportunities for walking and cycling links, for new and existing residents. But if deliver southern option, questions on how significant elements of the eastern link road can be delivered. Developers haven't yet committed to paying for it. If eastern link not delivered, congestion issues are raised, including impacts on AQMA.
Employment	For all options, location is at Aston Clinton.

3. Hybrid option	
Transport	Concern that want be able to deliver the eastern link. Modelling shows this is worst on time and costs, second on distance and (marginally) on modes. As with the southern option, potentially more accessible.

4. Workshop attendees

Name	Organisation
1. James Clifton	British Waterways
2. Matthew Partridge	Aylesbury Vale DC (Leisure and Cultural Services)
3. Matthew Dodds	AVDC Green Spaces (Biodiversity) Officer
4. Brian Miller	Conservation Officer BBO Wildlife Trusts.
5. Stephanie Moffat	Head of Policy and Performance AVDC
6. Rosie Brake	Planning Project Officer, Bucks CC
7. Catherine Whormsley	Green Infrastructure Officer, Bucks CC
8. Peter Challis	Area Manager, Sustrans
9. Colin White	Planning Officer, Chilterns Conservation Board
10. Duncan Laird	Bucks CC
11. John Kemplen	Bucks CC Transport
12. Niel Comley	Team Leader, Transport Strategy and Policy, Bucks CC
13. Sandy Kidd	Bucks CC Archaeologist
14. Charlotte Barrett	Highways Agency
15. Vicky Wetherell	Green Infrastructure Officer, Bucks CC
16. Mark Bailey	Natural Environment Team Leader, Bucks CC
17. George Gittens	Natural England
18. Darl Sweetland	Strategic Planning Bucks CC
19. Jeremy Williams	Bucks Fire and Rescue service
20. Kathy Russell	Aylesbury Vale Advantage