

Sustainability Appraisal/SEA

West of Swindon Update

February 2009

CONSULTATION DRAFT

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1. Introduction & Background

- 1.1 This Sustainability Appraisal (SA) has been produced to accompany the West of Swindon Study Update Report, and should be read in conjunction with that report.
- 1.2 SA is a tool for promoting sustainable development. It assesses whether plans and policies meet sustainable development objectives by ensuring that social, environmental and economic factors are considered in the development of policies.
- 1.3 This Report will look at the potential significant effects of a number of development options to the west of Swindon, as detailed in the Study Update, and will provide information on the relative sustainability of each option.

West of Swindon Study Update

- 1.4 The Study Update assesses the most sustainable and appropriate location for the potential development of 3000 dwellings as an urban extension, or urban extensions, to the west of Swindon, within the North Wiltshire District Council administrative boundary. It builds on a previous assessment carried out for the area in the Swindon Small Scale Urban Extension Study¹ (SSUES).
- 1.5 The figure of 3000 dwellings to be located in North Wiltshire west of Swindon is the latest figure recommended through the Regional Spatial Strategy (RSS) for the South West 2006-2026, which is currently in the late stages of preparation. The study update assesses the area to ensure there is evidence available on the most appropriate location for the 3000 dwellings should they be confirmed through publication in the final RSS.

2. Methodology

Introduction

- 2.1 SA is required for all RSS revisions and new or revised Local Development Documents. The Study Update, as an evidence base document feeding into the Wiltshire Core Strategy, does not fall into these categories, and therefore SA is not a statutory requirement. However, it is considered important to carry out an appraisal to ensure sustainability objectives are being met.

Draft Wiltshire Council SA Framework

- 2.2 Wiltshire Council published a Draft SA Scoping Report for public consultation on 12th January 2009. The Scoping Report sets the

¹ Swindon Borough Council (January 2008) Swindon Small Scale Urban Extension Study.

context for ongoing SA work and is the first stage of the appraisal process.

- 2.3 The Scoping Report contains an SA Framework that provides the basis for describing, analysing and comparing significant effects in this SA Report and it is central to the SA process. The Framework contains a set of proposed environmental and sustainability objectives, which will be used to test the three development options outlined in the Study Update.
- 2.4 The assessment makes use of an assessment matrix - outlined in the Scoping Report. This is designed to identify if the proposed options are likely to lead to significant effects, and also assesses the temporary scale, reversibility, spatial scale and likelihood of any effects identified.
- 2.5 The proposed sustainability objectives are outlined below:

Table 1: Proposed Wiltshire SA objectives	
1.	Protect and enhance biodiversity and geological features and avoid irreversible losses.
2.	Promote the more efficient use of land and the use of suitably located previously developed land and buildings.
3.	Promote sustainable waste management solutions that encourage the reduction, re-use and recycling of waste.
4.	Use and manage water resources in a sustainable manner.
5.	Protect people and property from the risk of flooding.
6.	Improve air quality throughout Wiltshire and reduce and/or mitigate against all sources of environmental pollution.
7.	Reduce our impacts on climate change and reduce our vulnerability to future climate change effects.
8.	Protect, maintain and enhance the historic environment and archaeological assets.
9.	Protect and enhance the character and quality of Wiltshire's landscapes, maintaining and strengthening local distinctiveness and sense of place.
10.	Provide everyone with the opportunity to live in good quality, affordable housing, and ensure an appropriate mix of dwelling sizes, types and tenures.
11.	Provide a safe and healthy environment in which to live.
12.	Reduce poverty and deprivation and promote more inclusive and self-contained communities.
13.	Improve equality of access to, and engagement in local, high-quality community and cultural facilities.
14.	Raise educational attainment levels across the authority and provide opportunities for people to improve their workplace skills.
15.	Reduce the need to travel and promote more sustainable forms of transport.
16.	Encourage a vibrant and diversified economy and provide for long-term sustainable economic growth.
17.	Ensure adequate provision of high-quality employment land and diverse employment opportunities to meet the needs of local businesses and a changing workforce.

- 2.6 The Draft Scoping Report and full SA Framework can be viewed at: <http://www.wiltshire.gov.uk/wiltshire-scoping-report-2008-draft.pdf>

Previous assessment work

- 2.7 Development sites considered in the Study Update have already been subjected to extensive assessment in the form of Multi-Criteria Analysis (MCA) of development cells and a detailed assessment of sites within these cells.
- 2.8 The MCA concentrated on assessing a number of development cells to the West of Swindon, based on physical features such as field boundaries, transport corridors and topographical features. These were assessed in terms of environmental, accessibility and impact considerations.
- 2.9 The MCA provided an overview of the opportunities and constraints in the area as a whole, but a more detailed and subjective site analysis was then carried out based on its findings.
- 2.10 Assessment methodology and findings are included in the Study Update and related appendices. The findings from these assessments have been used to inform this SA.

3. Development of options

- 3.1 In order to achieve sustainable development, it is important for a wide range of options to be considered – options that are likely to have different sustainability implications and that can be compared in a meaningful way.
- 3.2 A total of nine development cells have been assessed through the MCA analysis and ten different sites assessed through the site analysis. The results of these two stages have been combined to form three options in the Study Update, considered to be the most sustainable from all findings.
- 3.3 The options assessed are as follows (refer to Section 6 of the Study Update for full details of each option):

Preferred Option: 3000 dwellings on land at Pry Farm, Ridgeway Farm and Moredon Bridge.

Alternative Option 1: 3000 dwellings along the western urban edge of Swindon across the available sites in order to keep development as close to the existing urban edge as possible.

Alternative Option 2: a large development south of Hook Street of at least 2500 dwellings with a separate urban extension at either land at Washpool or land at Ridgeway Farm and Moredon Bridge if needed. Potentially the full 3000 dwellings could be accommodated on land south of Hook Street subject to additional work being undertaken on the capacity of the site.

4. Options appraisal findings

- 4.1 Key findings from the appraisal of the three options are given below. This analysis includes a discussion of any potential secondary, cumulative and/or synergistic effects, and documents any difficulties or uncertainties encountered. The discussion focuses on significant positive and adverse effects, in the order they are listed in Appendix A.
- 4.2 Sites concerned have not been visited by the SA team – conclusions concerning significance have been made using the results of the MCA and site analysis work.

Preferred Option: Development at Moredon Bridge, Ridgeway Farm and Pry Farm

Biodiversity

- 4.3 There are significant biodiversity constraints concerning this option, related to the River Ray corridor and Cricklade Country Way. There are a number of County Wildlife Sites and a network of species rich hedgerows forming field boundaries in certain areas. It is considered that many of these issues could be successfully mitigated through use of an effective masterplanning process that considers a wide-ranging Green Infrastructure policy that protects and enhances existing biodiversity features.
- 4.4 The River Ray corridor will provide a focus for nature conservation efforts, to retain and enhance the most important ecological features. This offers the opportunity to create open space, green corridors and wildlife linkages.

Flood Risk

- 4.5 Flood risk is a significant concern in parts of the area under consideration, with areas of flood zones 2 and 3 and significant flooding events occurring in the past. There is also a risk of flooding to adjacent areas with potential increases in surface water runoff through development of land.
- 4.6 It is considered that these issues can be successfully mitigated through an effective masterplanning approach. Consideration should be given to the North Wiltshire Strategic Flood Risk Assessment (SFRA) and the Swindon SFRA, which have been produced to support the application of the Sequential Test outlined in Planning Policy Statement 25 (PPS25) and to guide the location of development.
- 4.7 A more detailed Flood Risk Assessment (FRA) will be required to support a planning application as required by PPS25 and the Environment Agency should be contacted as early as possible to ensure they agree with the methodology chosen. It will be necessary

for the FRA to address surface water runoff and the incorporation of SUDS which can also give considerable benefits for biodiversity.

Landscapes

- 4.8 Effects on the landscape in this area are judged to be significant. The MCA analysis describes the landscape as high quality and there are potential impacts on the setting of Purton.
- 4.9 Mitigation is not discussed in detail in the Study Update, however it states that coalescence with nearby settlements is an issue but that the separation distance between the outer edge of this site and Purton is greater than other areas west of Swindon. It suggests that careful screening and Green Infrastructure could alleviate any impact on Purton.
- 4.10 It may be possible to concentrate development further east on this site away from Purton. The MCA analysis states that landscape value could be protected in the Pry Farm area provided development did not proceed beyond hills to the west of the site.
- 4.11 Mitigation measures should also consider designing buildings sympathetically with the local area, with provision of lower density dwellings on the western edge. However, this may necessitate higher density requirements in other areas.

Housing

- 4.12 This option scores highly in terms of the potential for a development of this size to provide a wide range of housing that will benefit the local community. The option is large enough to accommodate all 3000 dwellings, and this concentration of development can deliver and sustain economies of scale and the critical mass to deliver infrastructure and wide ranging services and facilities that will be needed.
- 4.13 The size of the urban extension could allow significant developer contributions to be negotiated for affordable housing.

Community facilities

- 4.14 Again, the size of this development will allow for significant developer contributions for community facilities and allow good access to the urban area and any new development at Tadpole Farm.

Employment

- 4.15 The MCA analysis suggests that Ridgeway Farm and Moredon Bridge have good accessibility to existing employment areas. Pry Farm is more isolated but will be linked to the existing urban area via Ridgeway

Farm and Moredon Bridge. There is scope for provision of good quality employment land that is accessible to local residents.

Overall assessment of option

- 4.16 There are a number of environmental constraints associated with this option, as discussed, although many of these could be successfully mitigated with careful masterplanning. However, by avoiding the considerable area of land with biodiversity, landscape and flood risk constraints, housing densities may need to be increased across the development.
- 4.17 The isolation of the Pry Farm site is a concern because it currently has poor accessibility to existing services and employment. However, there are likely to be strong links by way of Ridgeway Farm and Moredon Bridge and accessibility can be significantly improved by the critical mass provided by the size of the development.
- 4.18 Careful consideration will also need to be given to transport issues. There are already concerns over traffic levels in the west of Swindon and substantial investment would need to be made in highways infrastructure and sustainable transport to mitigate for the predicted increase in car journeys.
- 4.19 The development is likely to be able to generate significant developer contributions for services and facilities that will enable a sustainable community to develop.

Alternative Option 1: Development along western urban edge

Flood Risk

- 4.20 There is a significant risk of flooding across some sites. However, it is difficult to establish how significant this may be as the option is vague about precisely where development would take place.
- 4.21 As with the Preferred Option, consideration should be given to the North Wiltshire SFRA and the Swindon SFRA and a more detailed FRA will be required to support a planning application as required by PPS25 and the Environment Agency should be contacted as early as possible to ensure they agree with the methodology chosen.
- 4.22 It will be necessary for the FRA to address surface water runoff and the incorporation of SUDS, which can also give considerable benefits for biodiversity.

Landscape

- 4.23 There are a number of landscape types that could be significantly affected by this option. Again, this will depend on where exactly

development takes place and the effectiveness of the masterplanning process.

- 4.24 Key areas include the setting to Lydiard Country Park and the setting of villages Purton and Lydiard Millicent. A number of mitigation measures can be employed, as already discussed. However, this option may not result in the amount of contributions that could effectively mitigate the environmental constraints.

Overall assessment of option

- 4.25 It has not been possible to adequately assess the significance of effects for this option because there is insufficient detail in the option. The option states that development would be spread along the western urban edge of Swindon, and it is not clear precisely where development would take place.
- 4.26 There would likely be a number of issues regarding biodiversity, flood risk and landscapes, as with the Preferred Option. However, proximity to the existing urban edge would allow good accessibility to existing services and facilities, including community and leisure facilities in West Swindon and existing bus services. Transport linkages to the centre of Swindon may also be easier and would require significantly less expenditure on infrastructure.
- 4.27 The SA agrees that this option may make delivery more complex, and a less concentrated approach may not facilitate the same range of benefits as the Preferred Option. However, the proximity to the urban area would mean that infrastructure requirements would be less than for the Preferred Option.
- 4.28 This Option is also likely to significantly impact upon the villages of Lydiard Millicent and Purton which will require mitigation measures to ensure impacts on the character of the villages and residents are adequately taken into account.

Alternative Option 2: Land south of Hook Street

Biodiversity

- 4.29 The assessment against the biodiversity SA objective has stated that, apart from details regarding features and habitats at Lydiard Park (on the edge of the site), there is little information available on biodiversity within the area itself. Impacts on Lydiard Park can be mitigated through use of buffer zones, planting etc. However, more information is required to allow a useful judgement.

Air quality & environmental pollution

- 4.30 This option scores poorly because of the proximity to the M4 motorway and would require substantial mitigation for noise and air pollution issues. This is possible with use of noise attenuation and buffer zones, however, and development at Wichelstowe, Swindon, would serve as a useful precedent.

Housing

- 4.31 This option scores highly in terms of the potential for a development of this size to provide a wide range of housing that will benefit the local community. The site is large enough to accommodate at least 2500 dwellings, and this concentration of development can deliver economies of scale and the critical mass to deliver infrastructure and wide ranging services and facilities that will be needed.
- 4.32 The size of the urban extension could allow significant developer contributions to be negotiated for affordable housing.

Transport

- 4.33 The MCA analysis has recorded the potential for severe impacts on Junction 16 of the M4 motorway that could exacerbate problems already experienced there. There is also the possibility of people using the stretch of the M4 between Junctions 15 and 16 for local use ie access to the A419.
- 4.34 Major transport solutions would be required and there are potential adverse impacts for Hook village.

Employment

- 4.35 There is good accessibility to a range of existing employment areas, and the size of development would generate contributions towards employment space on site.

Overall assessment of option

- 4.36 This options scores well against many of the environmental objectives, with the exception being potential air quality/noise issues and the M4. More information is needed regarding on-site biodiversity – it is considered that any impacts on Lydiard Park can be easily mitigated with a sufficient sized buffer zone.
- 4.37 There do not appear to be many landscape constraints at this site that would warrant classification as ‘significant’. However, impacts for the setting of Hook village is of concern.
- 4.38 The western part of this site, north of Wootton Bassett, is rather isolated, and significant investment in infrastructure would be needed to improve accessibility with the existing urban area of Swindon.

4.39 The development is likely to be able to generate significant developer contributions for services and facilities that will enable a sustainable community to develop.

5. Conclusions

- 5.1 The Update Report has outlined three potential options for development to the west of Swindon, and the SA has assessed these options against a wide ranging set of sustainability objectives. SA is an iterative process, feeding into the policy making process and leading to improved policies. It is, therefore, likely that further work will need to be undertaken on the SA as the technical study is taken forward.
- 5.2 The strategic nature of the Update Report, looking at locations for development rather than outlining development itself, has made it difficult to effectively assess impacts on issues such as waste, water, climatic factors and objectives relating to services and facilities because this will depend on greater knowledge of development location and sustainable design standards etc.
- 5.3 It is likely that any development of this size will increase demand for domestic water, increase pressure on waste facilities and have some effects on climatic factors. The sustainability of the development in terms of design, energy efficiency, renewable provision and reducing travel need, will determine how significant these impacts are.
- 5.4 Each of the three options will potentially lead to significant adverse effects against a number of sustainability objectives, but also some significant benefits. The Preferred Option has significant biodiversity, landscape and flood risk constraints, for which mitigation would be required. The two alternative options, however, appear to have less environmental constraints.
- 5.5 The Update Report states that the buffer zone required for Lydiard Park would push development further west. However, the same could be said for development in the north which may require a significant buffer for the River Ray Corridor, and this too would push development further west.
- 5.6 Alternative Option 2 has the potential for significant impacts on Junction 16 of the M4 motorway that could exacerbate problems already experienced there. It is likely that major transport solutions would be required in this area and there are potential adverse impacts for Hook village.
- 5.7 At this stage, the SA does not find any significant differences between the three options. An urban extension located on one site, as opposed to being spread out in a number of sites, may be likely to generate substantially more funding that can be used for mitigation and infrastructure. The Preferred Option and land south of Hook Street would potentially require far more investment in infrastructure than sites close to the western edge.

- 5.8 The option to spread development along the western edge of Swindon is not sufficiently detailed in the report to allow meaningful assessment. Development here would potentially need far less investment in transport, services and facilities as it could make use of existing facilities. However, the cumulative impact of 3000 dwellings in a number of smaller sized locations in west Swindon could have significant impacts on existing services and facilities, and it is not clear whether this option would generate sufficient developer funding to offset these.

Appendix A – Options Appraisal Matrices

Key

- T** = Temporary Scale (Short Term, ST; Medium Term, MT; Long Term, LT)
R = Reversibility (Reversible, R; Irreversible, I)
S = Spatial Scale (Area Specific, A; County Specific, C; Cross County Border, B)
L = Likelihood (Likely, L; Unlikely, U)
Sig. = Significance (see below)

Significance Assessment	Description
++	Option would have a major positive effect in its current form as it would resolve an existing issue or maximise opportunities. SIGNIFICANT
+	Option would have a minor positive effect.
?	Effect of option is uncertain.
0	Option would have a neutral effect.
-	Option would have a minor adverse effect.
--	The option would have a major adverse effect as it would substantially exacerbate existing problems. Consider exclusion of option. SIGNIFICANT

Preferred Option: 3000 dwellings on land at Pry Farm, Ridgeway Farm and Moredon Bridge

SA Objective (see Table 1)	Nature of Effect	Assessment of Effect					Justification and Evidence	Suggested Mitigation and Enhancement Measures
		T	R	S	L	Significance		
1. Biodiversity	Significant biodiversity issues	LT	I	A	L	--	Significant biodiversity constraints. River Ray corridor and Cricklade Country Way. A number of County Wildlife Sites and Community Forest site.	Significant biodiversity constraints could be mitigated through appropriate masterplanning. Any development should enhance existing biodiversity, make use of wide buffer zones and have a comprehensive GI policy.
2. Land and buildings	Loss of greenfield and agricultural land	LT	I	A	L	-/?	Development does not take place on PDL but will maximise housing densities at 50 dph overall.	Densities could be increased further to reduce land take. This option does not include possibility of developing PDL. Significance will depend on densities.
3. Waste management	Likely increase in waste arisings.	MT	R	A	L	-/?	Update Report does not address waste issues. More info. would be required to assess effects.	Likely increase in waste arisings from 3000 dwellings. Require investment in accessible recycling facilities and good doorstep collection.
4. Water resources	Likely increases in water usage.	MT	R	C	L	-/?	Development of this size likely to increase demand for water. More info. regarding water efficiency measures would be required to assess.	Demand reduction techniques should be employed. Dwellings should be highly water efficient to reduce demand.
5. Flood risk	Significant flood risk constraints in this area.	LT	R	B	L	--	Significant risk associated with River Ray Corridor and area to north/N East of option.	Widespread use of SUDS and avoid development in areas of flood risk. Mitigation possible through appropriate masterplanning.
6. Air quality & environmental pollution	Impact most likely from transport - road and railway.	LT	R	C	L	?	Effects would be better assessed when details of any masterplan known.	Mitigation would be needed to address noise issues associated with the railway line, which splits the option. Concentration of development would allow viable public transport.
7. Climate impacts	Likely increase in greenhouse gas emissions	?	?	B	?	-/?	Study Update does not address climate issues but a development of this size is likely to lead to an	Mitigation through promotion of public transport routes, provision of jobs and facilities to reduce travel need, energy

	from 3000 dwellings and increased transport movements						increase in emissions, mainly from dwellings and car use. Better assessment when details of development known.	efficient buildings and renewable energy provision. Buildings should be built to a high standard of sustainability and incorporate climate change adaptation.
8. Historic environment	Further study required to assess effects. Effects currently not known.	?	?	A	?	?	Limited info. currently available to assess effects. An archaeological feature has been identified adjacent to the Ridgeway Farm buildings and will require further study.	More detailed investigation required of entire site through masterplanning process.
9. Landscape	Potential for significant effects on a high value landscape.	LT	I	B	L	--/?	The MCA analysis has identified a high value landscape throughout this site. Potential effects on Purton and Cricklade Country Way. Mitigation certainly possible but will depend on specific details of development.	Landscape mitigation not addressed in detail in Study Update, but suggests careful screening and green infrastructure could alleviate any impact on Purton. MCA analysis suggests that sympathetic design would be required to set the context between Swindon, Purton and the wider landscape to the north.
10. Housing	The size of this option should allow wide ranging housing provision.	LT	R	C	L	++/?	Provision of 3000 dwellings on this site should allow a wide range of sizes, types and tenures and a more viable development than smaller sites. More info. is required, however, on specific details.	Housing should be provided in sustainable locations that allow good access to services and facilities. A good range of sizes, tenures and types should be provided to meet needs of all sectors. Housing should reach the highest possible standards of sustainable design.
11. Healthy environment	Effects will depend upon specific details of development.	MT	R	A	L	+/?	Study Update does not address specific details regarding provision of healthcare facilities or other details. More info. required at later planning stages. Likely to be positive if appropriate masterplanning carried out.	Masterplanning will be essential to ensure development of safe environment with high quality design features.
12. Poverty	Unable to	?	?	?	?	0	Unable to assess at this stage.	Development would need to achieve

and deprivation	assess at this stage.						Impacts will depend mainly on type of housing and tenure, job availability and access to services and facilities.	appropriate level of affordable housing to meet the needs of all members of the community and have good access to all services and facilities, especially for those without access to a car.
13. Community facilities	Likely to be better provision of services and facilities with a concentrated form of development.	MT	R	A	L	++/?	Concentration of development is likely to allow for good provision of services and facilities.	Masterplanning will be essential to ensure the development functions as a sustainable urban extension in itself and as part of Swindon, providing adequate services and facilities for all. Public transport availability & frequency will also be key.
14. Education	Potential shortfall in local primary provision.	MT	R	A	L	?	MCA analysis states that sites 8 & 9 have no capacity at local primary school. Would need to confirm current capacity for primary and secondary provision in area.	Require further study of school placements in local area.
15. Transport	Pry Farm is isolated. Likely to be impacts on existing road network and on Woodhall, Meadway & Withymead roundabouts.	LT	R	C	L	-	More details required to accurately assess impacts. MCA analysis states there are existing bus services in the area.	Parts of this site would require substantial investment in highways infrastructure, public transport provision and other sustainable transport modes making access easy to local services.
16. Economy	Potentially positive effects for local economy.	MT	R	B	L	+	Likely positive if jobs provided for local people, easy access to Central Area of Swindon and wide choice of housing for local workforce.	It is imperative that a development of this size helps the economic regeneration of Swindon, especially the Central Area.
17. Employment	Potentially positive effects	MT	R	B	L	++	MCA analysis suggests Ridgeway Farm and Moredon Bridge have	Further technical study required to assess location and amount of

	if there is good access to existing employment sites and jobs made available locally on site.						good accessibility to employment areas, however, Pry Farm relatively isolated. Pry Farm will be linked to Swindon via Ridgeway Farm and Moredon Bridge and it will be possible to include adequate provision of employment on site of this size.	employment provision. Must ensure no significant adverse effects on viability of Central Area of Swindon.
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Alternative Option 1: 3000 dwellings along the western urban edge of Swindon								
SA Objective (see Table 1)	Nature of Effect	Assessment of Effect					Justification and Evidence	Suggested Mitigation and Enhancement Measures
		T	R	S	L	Significance		
1. Biodiversity	A number of possible impacts on individual sites, habitat fragmentation, ancient woodland and River Ray Corridor.	LT	I	A	L	-/?	Difficult to assess. It is not clear from the option to 'spread development along the western urban edge of Swindon' exactly where development would take place. More information on location of development would be required.	Any development should try to protect and enhance existing biodiversity. Key areas along the western edge include Lydiard Park, Cricklade Country Way and the River Ray Corridor.
2. Land and buildings	Loss of greenfield and agricultural land	LT	I	A	L	-/?	Development does not take place on PDL but will maximise housing densities at 50 dph overall.	Densities could be increased further to reduce land take. This option does not include possibility of developing PDL. Significance will depend on densities.
3. Waste management	Waste arisings likely to increase, despite increases in recycling rates generally.	MT	R	C	L	-/?	MCA analysis notes that Pry Farm and Woodbridge Farm Landfill sites are in the centre of Site 10.	Development should include wide range of accessible neighbourhood recycling facilities. There should be promotion of doorstep collection services throughout the area.

4. Water resources	Water demand likely to increase in line with population increase from 3000 dwellings.	LT	R	B	L	-/?	Study Update gives no details regarding water efficiency of buildings.	Highest level of water efficiency in new dwellings required. Use of water harvesting and grey water recycling and demand reduction techniques. Promotion of water efficiency by local authority and other agencies.
5. Flood risk	Potential significant impacts in some areas.	LT	I	A	L	--/?	Option is not at all specific on location. Very difficult to assess. High risk areas include Shaw Brook, Lydiard Brook, River Ray Corridor.	Development should avoid flood plain and areas at risk of flooding. Widespread use should be made of SUDS and reducing the amount of impermeable areas that add to surface water run-off.
6. Air quality & environmental pollution	Potential impacts at sites in close proximity to M4, railway line and landfill sites. Air quality impacts from traffic.	MT	R	A	L	-/?	MCA analysis has noted that there are likely impacts at some sites in close proximity to M4 and railway line. Air quality and noise. Development of this size also likely to increase traffic movements with associated impacts.	Promotion of sustainable modes of transport. Design to reduce need to travel. Allow good size buffer zone next to M4 and railway.
7. Climate impacts	Potential adverse impacts from 3000 dwellings and traffic movements.	LT	R	B	L	?	Difficult to make assessment without detail of location of development, provision of sustainable modes of transport and energy efficiency & renewable energy etc. provision.	Promote sustainable transport modes. Design to high level of energy efficiency and incorporate sustainable construction techniques. Reduce need to travel and make good provision for renewable energy (on or off site), CHP, solar etc.
8. Historic environment	Impacts unknown without further study. Archaeological feature identified at	LT	I	A	?	?	Unable to accurately assess. Little detail.	Need further investigation of all sites.

	Ridgeway Farm buildings.							
9. Landscape	A range of impacts anticipated. Further detail required on location of development.	LT	I	C	L	--/?	MCA analysis has identified a range of landscapes and quality. Key areas include Lydiard Park and setting of villages such as Purton and Lydiard Millicent.	Landscape features can be protected through a range of measures such as rural buffers, GI, tree planting and avoiding development in certain locations or building at low density in some locations.
10. Housing	3000 dwellings. Will these sites achieve desired level of affordable housing/tenure etc?	LT	I	A	L	+/?	Less concentrated approach to development may not deliver benefits associated with one sustainable functioning urban extension.	Any development would need to ensure appropriate mix of affordable housing, size, type and tenure to meet everyone's needs.
11. Healthy environment	Close proximity to existing facilities. Good access to countryside.	LT	R	B	L	+	Impacts will depend greatly on design, public realm, open space provision, access to services etc. Difficult to assess without further details of location and development itself.	Improve quality of life through excellent provision of open space, access to services and local healthcare facilities.
12. Poverty and deprivation	Unable to assess at this stage.	?	?	?	?	0	Unable to assess at this stage. Impacts will depend mainly on type of housing and tenure, job availability and access to services and facilities.	Development would need to achieve appropriate level of affordable housing to meet the needs of all members of the community and have good access to all services and facilities, especially for

								those without access to a car.
13. Community facilities	These sites may benefit from proximity to existing facilities but also place pressure on them. Development unlikely to raise as much funding as Pref. Option.	MT	R	A	L	?	Smaller individual developments may not generate sufficient developer contributions for community facilities. Likely to be additional pressure of demand on existing facilities.	Excellent access to existing facilities would be required if new facilities cannot be provided. Mitigation of increased demand on existing facilities would be needed.
14. Education	Funding for school place provision?	LT	R	A	L	?	May be insufficient funding for school places. However, many locations are in close proximity to existing schools.	Further research required into capacity of local schools and potential to achieve developer contributions for new schools.
15. Transport	3000 dwellings likely to increase car movements.	MT	R	A	L	-	Will depend where development takes place. Range of local bus services in W. Swindon and good links to urban area.	Promotion of sustainable transport modes required and range of local services and facilities to reduce the need to travel.
16. Economy	Little impact expected.	ST	R	B	L	0	The urban extension must support the local economy, especially the Central Area of Swindon. Potential for support for rural businesses to the west.	Ensure job opportunities within the development and strong access links to centre.
17. Employment	Potential lack of developer contributions for employment land?	MT	R	C	?	?	Many of these sites in close proximity to existing employment. Would need further research into provision of employment sites and location.	Provide good quality employment land within development to reduce need to travel and provide good access links to existing sites.

Alternative Option 2: A large development south of Hook Street of at least 2500 dwellings.

SA Objective (see Table 1)	Nature of Effect	Assessment of Effect					Justification and Evidence	Suggested Mitigation and Enhancement Measures
		T	R	S	L	Significance		
1. Biodiversity	Potential impacts on habitats at Lydiard Park.	LT	I	A	L	? Need more info on biodiversity at this site.	MCA analysis contains much detail regarding Lydiard Park but little or no information for Site 1. What biodiversity features exist here?	Mitigation to Lydiard could include provision of wide buffer zone and GI provision. Further investigation for rest of site.
2. Land and buildings	Loss of greenfield and agricultural land	LT	I	A	L	-/?	Development does not take place on PDL but will maximise housing densities at 50 dph overall.	Densities could be increased further to reduce land take. This option does not include possibility of developing PDL. Significance will depend on densities.
3. Waste management	Waste arisings likely to increase, despite increases in recycling rates generally.	MT	R	C	L	-/?	Significant landfill site at Lower Hook farm. Likely to be minor adverse effects of significant population increase in this area.	Development should include wide range of accessible neighbourhood recycling facilities. There should be promotion of doorstep collection services throughout the area.
4. Water resources	Water demand likely to increase in line with population increase from 3000 dwellings.	LT	R	B	L	-/?	Study Update gives no details regarding water efficiency of buildings.	Highest level of water efficiency in new dwellings required. Use of water harvesting and grey water recycling and demand reduction techniques. Promotion of water efficiency by local authority and other agencies.
5. Flood risk	Little or no impact.	LT	R	A	U	0	Minor issue of Shaw Brook narrow flood plain.	Flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. Widespread use should be made of SUDS and reducing the amount of impermeable areas that add to surface

									water run-off.
6. Air quality & environmental pollution	Noise and air quality issues from proximity to M4.	LT	I	A	L	--	Sites are adjacent to M4.	Mitigation would be required, including allowing a wide buffer zone or building a noise earth bund.	
7. Climate impacts	Likely increase in greenhouse gas emissions from 3000 dwellings and increased transport movements	?	?	B	?	-/?	Study Update does not address climate issues but a development of this size is likely to lead to an increase in emissions, mainly from dwellings and car use. Better assessment when details of development known.	Mitigation through promotion of public transport routes, provision of jobs and facilities to reduce travel need, energy efficient buildings and renewable energy provision. Buildings should be built to a high standard of sustainability and incorporate climate change adaptation.	
8. Historic environment	No information available.	?	?	?	?	?	Limited info. currently available to assess effects.	Further investigation of historical sites in this area before impacts can be assessed.	
9. Landscape	Impacts on Hook village and Lydiard Park.	LT	I	A	L	-	MCA analysed has identified potential impacts on the identity of Hook village to the west of this site.	Could avoid development in these areas and provide adequate sized buffer.	
10. Housing	The size of this option should allow wide ranging housing provision.	LT	R	C	L	++/?	Provision of 3000 dwellings on this site should allow a wide range of sizes, types and tenures and a more viable development than smaller sites. More info. is required, however, on specific details.	Housing should be provided in sustainable locations that allow good access to services and facilities. A good range of sizes, tenures and types should be provided to meet needs of all sectors. Housing should reach the highest possible standards of sustainable design.	
11. Healthy environment	Good access to Freshbrook surgery from	MT	R	A	L	+/?	Study Update does not address specific details regarding provision of healthcare facilities or other	Masterplanning will be essential to ensure development of safe environment with high quality design features.	

	east end.						details. More info. required at later planning stages. Likely to be positive if appropriate masterplanning carried out.	
12. Poverty and deprivation	Unable to assess at this stage.	?	?	?	?	0	Unable to assess at this stage. Impacts will depend mainly on type of housing and tenure, job availability and access to services and facilities.	Development would need to achieve appropriate level of affordable housing to meet the needs of all members of the community and have good access to all services and facilities, especially for those without access to a car.
13. Community facilities	East side reasonable access to services. West side more isolated and closer to Wooton Bassett.	MT	R	C	L	++/?	Impacts not known at this stage. West side is isolated from Swindon urban area facilities but development of this size can generate sufficient contributions for new community facilities.	Ensure sufficient funding for facilities, particularly western end of development with convenient access for all.
14. Education	Potential impacts on capacity.	LT	R	A	L	?	Greendown Secondary School. Freshbrook and Lydiard Tregoze Primary Schools nearby.	Require School Places Study for area. Require developer contributions for schools.
15. Transport	Severe impacts on M4 J.16 and possible junction hopping. Implications for Hook village.	LT	I	A	L	--	MCA analysis states that location may encourage unsustainable patterns of commuting along the M4. Hook village may receive increase in vehicles.	Major transport solutions may be required to accommodate development here. Improvements would need to be made to Blagrove roundabout and significant investment in sustainable transport modes into Central Swindon.
16. Economy	Potentially positive effects for local economy.	MT	R	B	L	+	Likely positive if jobs provided for local people, easy access to Central Area of Swindon and wide choice of housing for local	It is imperative that a development of this size helps the economic regeneration of Swindon, especially the Central Area.

							workforce.	
17. Employment	Potentially positive effects if there is good access to existing employment sites and jobs made available locally on site.	MT	R	B	L	++	Windmill Hill, Blagrove Industrial Estate and Interface employment site within cycling distance.	This site should be large enough to generate contributions for employment land and better accessibility to existing sites.