

Sustainability Appraisal for the Minerals Core Strategy – Revised Spatial Options

SA Objective No.	Warwickshire SA Objective	Spatial Option 1			Spatial Option 2			Spatial Option 3		
		Extensions to existing mineral sites			Continuation of Existing Mineral Plan Allocations – Dispersed Pattern of Development			New sites and extensions close to growth areas and markets		
		Effect (+/+, +, 0, -, -/-, ?)			Effect (+/+, +, 0, -, -/-, ?)			Effect (+/+, +, 0, -, -/-, ?)		
		Short term	Medium term	Long term	Short term	Medium term	Long term	Short term	Medium term	Long term
1	Conserve and enhance biodiversity	-	0	++	0	0	+	-	0	++
2	Protect and improve water resources	0	+	+	0	0	+	0	+	+
3	Avoid, reduce and manage flood risk	+	+	+	+	+	+	0	+	+
4	Safeguard environmental quality.	0	+	+	0	-	-	0	+	+
5	To minimise potential impacts on community health	0	+	+	0	+	0	0	+	+
6	To conserve and enhance the character and quality of the County's landscape and townscape	-	0	+	0	0	0	-	+	++
7	Preserve and enhance sites, features and areas of historic, archaeological or architectural importance, and their settings	+	+	+	0	+	0	0	+	+
8	Protect soil resources	-	-	+	+	+	+	-	0	+
9	To preserve and protect geological features and promote geological conservation	0	+	+	0	0	0	0	+	+
10	To promote the delivery of energy efficiency and carbon reduction targets	--	-	0	-	--	--	+	+	++
11	Reduce consumption of natural resources	0	0	0	-	--	--	+	+	++
12	To promote adherence to the movement of waste up the waste hierarchy.	-	+	+	-	--	--	+	+	+
13	Enfranchise the community in improving the local environment	0	+	+	-	--	--	+	+	+
14	Improve accessibility to waste management services and facilities	0	+	+	-	--	--	+	+	++
15	Ensure that the waste industry plays a central role in the sustainable economic development of Warwickshire.	0	+	+	--	--	--	+	+	++
16	Explore linkages between the minerals and waste sectors	+	+	++	-	-	--	+	+	++
17	To encourage waste operators to explore new and innovative environmental technologies.	0	+	++	-	--	--	+	+	++
	TOTALS	++ = 3 + = 27 0 = 14 - = 6 -- = 1			++ = 0 + = 10 0 = 15 - = 10 -- = 16			++ = 8 + = 32 0 = 8 - = 3 -- = 0		

Spatial Option 1 – Extensions to existing mineral sites

SA Objective	Predicted Nature of Effect Positive	Predicted Nature of Effect Negative	Spatial Option			Commentary/ Explanation <i>Note predicted nature of effect, how, who and where it will impact, and enhancement opportunities</i>	Enhancement and mitigation
			Net Effect (+/, +, 0, -, -/)				
			S T	M T	LT		
1 Conserve and enhance biodiversity	Extensions to existing mineral sites can help conserve, and prevent use of new greenfield sites. Over the long term, new habitats could be created. Use of existing sites and infrastructure could mean that established habitats could remain unaffected. Extensions could be a good way of introducing better restorations of old sites through the application of new principles such as BAP targets.	Potential for cumulative negative impacts at localised sites in the short term (such as noise, vibration, pollution), due to the extensions to existing sites. Existing sites are often located in remote/Greenfield locations.	-	0	++	Beneficial effects will not be realised immediately. The scope of this option means that potential negative effects from extensions (noise, vibration, pollution etc.) will only be experienced at existing sites. There is potential to plan for biodiversity by linking different restoration schemes at different quarries.	Care should be taken to preserve the 18 Local Nature Reserves (LNRs), one site of International Importance, the Ensor's Pool Special Area Conservation (SAC), 8 Country Parks, 62 Sites of Special Scientific Interest (SSSI) and part of the Cotswold Area of Outstanding Natural Beauty (AONB). Enhancement could include achieving BAP targets.
2 Protect and improve water resources	Extension to existing sites only could protect other water resources in undeveloped areas. In existing developed areas there is likely to be greater knowledge and assessment of groundwater protection.	There is potential for cumulative negative effects to be experienced at localised sites in some areas.	0	+	+	Expansion of existing sites would generally bring greater benefits over the longer term. New sites may require much greater assessment.	Continued monitoring will be required to ensure water resources are not compromised, in particular the Avon and Tame catchments.
3 Avoid, reduce and manage flood risk	The Strategic Flood Risk Assessment will help in guiding development to low flood risk areas. By developing at established minerals sites, there is a good chance that there would be low flood risk. Extensions would have to comply with building control requirements (SUDs, recycling rainwater etc). Most mineral	Existing minerals sites may be located in flood risk zones. Where new developments are proposed they must ensure that there are safeguards in place near adjacent developments to reduce any risk of flooding.	+	+	+	The SFRA Sequential Test could site development in low flood risk areas to mitigate against the negative effects of flooding. Where there is proven potential to alleviate flooding, quarry extensions could contribute to the flood protection of an area over the long term.	Sites would be diligently chosen with respect to their potential impacts on the environment including flood risk, population and economy. The region is particularly prone to flooding, so diligent site selection is key to minimising the risk. The scope of the option means that there is a limited number of sites to consider.

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	developments are compatible with flooding and may be used as flood alleviation areas to protect other development.							
4	To safeguard environmental quality	The negative effects of new development (noise, vibration, dust etc.) will be restricted to where the existing mineral sites are established and there are likely to be strict control mechanisms already in place.	New development on existing sites could result in further noise, vibration, pollution etc. For specific minerals such as building stone in more remote locations there could be more traffic movements and potential negative impacts. .	0	+	+	The negative effects from creating new development would only be experienced at existing locations. These effects can reduce over time if adequate safeguards are imposed.	The design of the mineral operation and the working practices would have to comply with set regulations in place to prevent damage to the environment. Sites would be diligently chosen to help safeguard environmental quality as much as possible. Consultation with professional bodies such as the Environment Agency will also play a part in safeguarding environmental quality.
5	To minimise potential impacts upon community health.	Existing sites should have safeguards in place to ensure potential negative effects have been eliminated.	Negative impacts on communities could result from quarries/ mineral workings if they were located too close to sensitive receptors such as houses and schools. Extensions to existing sites could mean that there are likely to be cumulative impacts experienced by local communities.	0	+	+	Impacts may be reduced by sensitive locational strategies, good design and working practices to minimise impacts upon community health.	Consultation with a wide range of stakeholders will seek to incorporate concerns that the public may have. It is key that new sites do not jeopardise community health as Warwickshire compares favourably with England and Wales.
6	To conserve and enhance the character and quality of the County's landscape and townscapes	New facilities on existing quarries will help conserve, and prevent use of, new greenfield sites, as well as conserving areas of landscape and townscape merit.	It is probable that development on existing sites may cause greater negative effects in a few areas resulting from the new development. i.e. through the cumulative impact.	-	0	+	The new development on existing mineral sites would have to accord with landscape character and design guidance so as to be sympathetic to the surroundings. Negative effects expected in the short term but long term benefits overall.	Site selection as well as site development is key in ensuring that impacts to the landscape and townscape are minimised, in particular, the Cotswolds Area of Outstanding Natural Beauty in the Stratford-upon-Avon District. This is the third largest protected landscape in the UK. Land of high agricultural value (Grade 3a and above) should not be encouraged for large scale development.
7	Preserve and enhance sites, features and areas of historic,	It is likely that these objectives will be met as a result of integrated planning policy considerations. Developing on	Assets may be lost forever if proper safeguards and conditions are not in place i.e. for survey work prior to development.	+	+	+	Through the integrated planning policy considerations, it is likely that these features will be preserved, and where possible,	Consultation with bodies such as English Heritage and other groups will help to preserve Warwickshire's historic, archaeological and architectural assets.

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	archaeological or architectural importance, and their settings	existing sites can preserve assets elsewhere for the future when there may be better methodology for assessment.	Potential cumulative impacts could be experienced at existing sites.				improved. There are overall benefits because discoveries will help increase our knowledge of the past.	
8	Protect soil resources	Development at existing sites could protect soil resources elsewhere in the County.	There could be potential negative cumulative impacts on soil resources at existing mineral sites as a result of additional development.	-	-	+	Likely that soil resources will not be impacted in the short term, however there may be the opportunity to enhance soil resources through less reliance on landfill in the longer term.	There is an opportunity to diversify waste management facilities thereby placing less reliance on landfill and over time improving soil resources. There should be adequate safeguards in place to enable appropriate soil protection, storage and handling on site.
9	To preserve and protect geological features and promote geological conservation	Geological conservation should be achieved through integrated planning policy considerations. Mineral extensions may provide considerable benefits especially where there are known geological assets elsewhere.	The geology at existing sites could be negatively affected especially where it is not possible to retain the finds.	0	+	+	Any potential negative effects resulting from development on existing sites will be exceeded by the benefits in preserving geological assets elsewhere.	Regionally important Geological and Geomorphological Sites (RIGs) should be protected as far as possible.
10	To promote the delivery of energy efficiency and carbon reduction targets	Extending existing quarries could produce economies of scale from the existing infrastructure over the longer term providing lower carbon output as opposed to new sites.	Likely that the need for additional new sites would not contribute to carbon reduction targets in the short term. Sites may be in remote locations, meaning that greater traffic movements could reduce energy efficiency and prevent carbon reduction.	--	-	0	The energy efficiency and carbon reduction benefits from extending existing sites would have to be balanced with the traffic impacts resulting from remote locations.	A robust locational strategy linking minerals sites to their markets is the most effective method of ensuring the reduction of carbon outputs and increasing energy efficiency by reducing the distances minerals are transported.
11	Reduce consumption of natural resources	Existing quarry extensions would be likely to require less consumption of natural resource than new quarry developments.	In the short term there would be an increase in the consumption of natural resources.	0	0	0	The addition of new sites will increase the consumption of natural resources in the short term.	There should be less reliance of landfill as a means of restoring quarries. Innovative ways need to be found to ensure that minerals developments are in line with the Waste Hierarchy.
12	To promote adherence to the	In the long and medium term, waste should be moved up the	In some cases landfill may be the only option. In which case the	-	+	+	There should be less reliance of landfill as a means of restoring	Incentives need to encourage the timely movement of waste up the waste hierarchy. Innovative ways need to

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movement of waste up the waste hierarchy	waste hierarchy. There is an opportunity to contribute to recycling and save scarce resources by discouraging the tipping of inert waste as landfill in mineral restoration schemes.	particular scheme would be less sustainable but justified in practical terms.				quarries. Other uses could be encouraged or where landfilling is the only option look at ways of reducing the amounts required for instance by restoring land at lower than existing levels. Some mineral wastes can not be recycled and are needed to be put back in to the voids.	be found to ensure that minerals developments are in line with the Waste Hierarchy
13 Enfranchise the community in improving the local environment	The Option would facilitate some communities to be enfranchised in improving the local environment. Sites where there are proposed extensions would usually have Liaison meetings with operators and already would be enfranchised.	In areas with poor existing community networks near where extensions are proposed, it may be harder for communities to respond and become and enfranchised.	0	+	+	Parish Councils have an important role to play in enabling people to voice concerns to the County Council. Liaison groups and local forums are already usually strong in areas where mineral development has already taken place.	It is important that the local community are consulted at the earliest possible stage to ensure that they have a forum where their concerns can be aired and taken on board.
14 Improve accessibility to waste management services and facilities	There is scope to ensure that mineral extensions are located close to major transport routes as part of the chosen Preferred Option. Where this is achieved there is also potential for waste facilities to be located in tandem.	In some cases it may not be possible to locate quarries in the most accessible locations ie where there is building stone – as minerals can only be dug where they exist. It may not be appropriate to co-locate waste facilities in these locations. Waste developments in existing quarries can sometimes drag out the timescale of the restoration period.	0	+	+	Siting of mineral developments in remote locations could result in more frequent and longer traffic movements, which could lead to greater costs, pollution, noise, etc.	Where waste recycling is an integral part of the proposed element of a quarry there should be safeguards at every stage to ensure that local amenity is protected.
15 To ensure that the minerals and waste industry plays a central	Economies of scale through utilising existing infrastructure could be achieved by extending existing sites. There is scope for	The remote location of some sites could result in higher transportation costs. However most existing quarries in the	0	+	+	The economies of scale and employment opportunities achieved in the short term would have to be balanced against the	Opportunities to utilise more sustainable forms of transport (e.g. rail, canal etc.) will be investigated.

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role in the sustainable economic development of Warwickshire	some waste facilities to be located on minerals sites without adversely affecting communities. The option would also create employment opportunities.	county are located close to good transport networks already				considerable transport costs and impacts incurred over the longer term.	
16 To explore linkages between the waste and minerals sectors.	Existing mineral sites may already have waste operations on site. Economies of scale may be achieved by extending existing sites. Co-location of sites may reduce environmental impacts	Possible cumulative impacts experienced where minerals and waste operations co-exist.	+	+	++	The benefits from co-location of mineral and waste sites would far outweigh the cumulative impacts over the short, medium and long term.	There should be less reliance of landfill as a means of restoring quarries. Innovative ways need to be found to ensure that minerals developments are in line with the Waste Hierarchy.
17 To encourage minerals and waste operators to explore new and innovative environmental technologies.	Extending existing sites may prompt operators to investigate new and innovative technologies to exploit the economies of scale.	Extending existing sites may deter operators from diversifying and providing alternatives to historic restoration schemes which may not always be the most sustainable e.g. it may be easier and more lucrative to fill sites with inert waste as opposed to finding more innovative ways of restoring a site.	0	+	++	Location close to communities could force better practice in terms of design and operations.	Extending existing sites may prompt operators to investigate new and innovative technologies to exploit the economies of scale.

Spatial Option 2 – Continuation of Existing Mineral Plan Allocations – Dispersed Pattern of Development

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1 Conserve and enhance biodiversity	Dispersed developments around the County may result in fewer cumulative impacts than larger sites with numerous extensions. Dispersed development could enable biodiversity restoration improvements to be channelled around the county.	Development at dispersed sites around the county may not lead to a focussed restoration strategy based on habitat linkages. New developments dispersed around the county will mean that established habitats will be affected.	0	0	+	New sites coming forward and unimplemented existing site allocations will probably have had less assessment work carried out in the past.	The site selection process should seek to link habitats and species through restoration proposals. Enhancement could include achieving BAP targets. Care should be taken to preserve the 18 Local Nature Reserves (LNRs), one site of International Importance, the Ensor's Pool Special Area Conservation (SAC), 8 Country Parks, 62 Sites of Special Scientific Interest (SSSI) and part of the Cotswold Area of Outstanding Natural Beauty (AONB).
2 Protect and improve water resources	Smaller dispersed developments may have a lesser effect on one area's groundwater resources than a larger site with numerous extensions.	There may be localised effects on water resources which would have to be surveyed in detail at the planning application stage.	0	0	+	Each site needs to be surveyed in detail to assess whether there are any impacts on communities.	Potential for enhancement and mitigation depends on the particular site conditions. Continued monitoring will be required to ensure water resources are not compromised, in particular the Avon and Tame catchments.
3 Avoid, reduce and manage flood risk	Smaller dispersed developments may have a lesser effect on flood risk than a larger site with numerous extensions.	There may be localised effects on flooding which would have to be surveyed in detail at planning application stage.	+	+	+	The SFRA Sequential Test could site development in low flood risk areas to mitigate against the negative effects of flooding. Where there is proven potential to alleviate flooding, quarry extensions could contribute to the flood protection of an area over the long term.	Sites would be diligently chosen with respect to their potential impacts on the environment including flood risk, population and economy. The region is particularly prone to flooding, so diligent site selection is key to minimising the risk. This option would require numerous sites to be assessed.
4 To safeguard environmental quality	Amenity issues would be dispersed to many locations but could be of a smaller scale than quarry extensions thereby enabling reduced potential impacts e.g. by dust, noise and disturbance.	Noise, dust and general disturbance could be reduced in a dispersed strategy. However, problems associated with traffic could be exacerbated in smaller communities. This may outweigh all other amenity impacts.	0	-	-	The remote location of sites in areas where quarrying hasn't occurred in recent history could be the result. This could impact upon environmental quality due to pollution, noise and dust	The design of the development and the working practices would have to comply with set regulations in place to prevent damage to the environment. Sites would be diligently chosen to help safeguard environmental quality as much as possible. Consultation with professional bodies such as the Environment Agency will also play a part in safeguarding environmental quality.

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5	To minimise potential impacts upon community health.	Quarries dispersed around the county will lead to less overall impact on specific areas which may have traditionally been associated with quarrying i.e. there will be less of a cumulative impact on a few areas in the county.	Any adverse effects will be spread out amongst a number of communities.	0	+	0	from more traffic movements. More localised impacts could be the outcome of this spatial option.	Consultation with a wide range of stakeholders will seek to incorporate concerns that the public may have. It is key that new sites do not jeopardise community health as Warwickshire compares favourably with England and Wales.
6	To conserve and enhance the character and quality of the County's landscape and townscapes	The effect on the landscape will be more dispersed around the county. Townscapes may not be unduly affected.	Localised effects in some rural communities over the long term. Minerals sites may sometimes be proposed in outlying areas which can be areas of higher landscape quality.	0	0	0	Dispersed development would be likely to be spread over a number of sites. Cumulative impact would be reduced in specific areas.	Newer sites in previously undeveloped minerals areas may create the perception of a worse impression than areas with existing quarries.
7	Preserve and enhance sites, features and areas of historic, archaeological or architectural importance, and their settings	There is archaeological potential as most 1995 Minerals Plan sites are undeveloped. Evidence from mineral development has led to many discoveries and increased knowledge of our past in the county.	Development may interfere with areas of archaeological importance. Where sites are discovered they may not be able to be retained in situ. New quarries dispersed within the County are unlikely to preserve and enhance	0	+	0	More sites in new quarry locations would be likely to be advantageous for new archaeological discoveries.	Through the application of archaeological guidance set out in PPG15 quarry operators will have to fully assess any site's potential prior to development.
8	Protect soil resources	Effects on soil would be of a small scale and would be limited.	Any negative effects would be dispersed to more communities.	+	+	+	Likely that soil resources will not be impacted in the short term, however there	There is an opportunity to diversify waste management facilities thereby placing less reliance on landfill and over time improving soil resources.

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						may be the opportunity to enhance soil resources through less reliance on landfill longer term.		
9	To preserve and protect geological features and promote geological conservation	There is geological potential as most sites will be undeveloped. Evidence from mineral development has led to many discoveries and increased knowledge of our geological past in the county.	Development may interfere with areas of archaeological importance. Where sites are discovered they may not be able to retained in situ.	0	0	0	More sites in new quarry locations would be likely to be advantageous for new geological discoveries.	Through the application of guidance set out in PPG15 quarry operators will have to fully assess any site's potential prior to development for geodiversity.
10	To promote the delivery of energy efficiency and carbon reduction targets	At this stage no benefits have been identified for this option.	This Option would be less energy efficient as dispersed development would not lead to economies of scale in terms of plant and processing. Transportation distances of minerals from more dispersed areas would not be carbon efficient.	-	--	--	As this option would seek to locate more quarries in more remote location it would be less sustainable than the other options.	A robust locational strategy linking minerals sites to their markets is the most effective method of ensuring the reduction of carbon outputs and increasing energy efficiency by reducing the distances minerals are transported.
11	Reduce consumption of natural resources	At this stage no benefits have been identified for this option.	Transportation of minerals from more dispersed areas would increase the consumption of resources over time and would be less effective than a more centralised approach to siting minerals developments.	-	--	--	As this option would seek to locate more quarries in more remote location it would be less sustainable than the other options.	A robust locational strategy linking minerals sites to their markets is the most effective method of ensuring the reduction of carbon outputs and increasing energy efficiency by reducing the distances minerals are transported.
12	To promote adherence to the movement of waste up the waste hierarchy	Localised dispersed facilities could encourage waste operators to co-locate within quarries in more remote areas if there are less amenity impacts.	A more centralised approach would be more likely to encourage the movement of waste up the waste hierarchy.	-	--	--	Waste facilities within quarries can promote the movement of waste up the waste hierarchy but it would be harder to link waste and	A more dispersed scattered approach around the county may require much more infrastructure investment in some rural communities to mitigate such developments.

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							quarry operations in very remote locations. This could impact on communities through traffic and noise impacts.	
13	Enfranchise the community in improving the local environment More dispersed sites affecting more communities may not lead to greater enfranchisement.	A smaller number of more central sites may allow the community voice to be more focussed. Consequently there is likely to be less enfranchisement for communities close to mineral sites in this Option.	-	--	--	Despite the disadvantages the option might provide employment in local rural communities.	Ensure liaison groups are set up to discuss issues where quarries are proposed close to communities affected. The Minerals Planning Authority needs to have close links to the Parish Councils in that area.	
14	Improve accessibility to waste management services and facilities More dispersed sites in less accessible locations would not necessarily improve accessibility to waste services and facilities.	In some cases it may not be possible to locate quarries in the most accessible locations ie where there is building stone – as minerals can only be dug where they exist. It may not be appropriate to co-locate waste facilities in these locations. Waste developments in existing quarries can sometimes drag out the timescale of the restoration period.	-	--	--	Co- location of quarries and waste operations would be sustainable provided they are located in sustainable locations.	The only way this could be achieved using this option would be for new transport linkages from dispersed locations to the major waste facilities proposed for the county.	
15	To ensure that the waste industry plays a central role in the sustainable economic development of Warwickshire This option may not encourage this objective to be attained.	A dispersed strategy to siting minerals developments would be less likely to encourage the waste industry to play a central role for reasons of economies of scale.	--	--	--	To enable this objective to take place in conjunction with minerals it would require much greater linkages between the waste and minerals LDF strategies.	The only way this could be achieved using this option would be for new transport linkages from dispersed locations to the major waste facilities proposed for the county.	

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16 To explore linkages between the waste and minerals sectors	If co-location is possible, innovative methods of exploiting linkages may be used, particularly in relatively remote locations.	Dispersed mineral developments may not be well linked to existing or future waste operations.	-	-	---	Likely that mineral plan allocations are remote from waste operations. The economic and environmental impacts that would result (increased/longer traffic movements, no economies of scale) would outweigh the benefits.	Both waste and minerals development frameworks would have to be closely aligned in order to exploit and enhance the links between the minerals and waste sectors.
17 To encourage waste operators to explore new and innovative environmental technologies.	Any co-located waste facilities within quarries could possibly be easier to manage in terms of if they are in remote locations.	A dispersed strategy to siting minerals developments would be less likely to encourage innovative technologies.	-	---	---	For the same reason given in no. 15 above the option would not be effective in encouraging new technologies.	See reasoning for no 15above.

Spatial Option 3 – New sites and extensions close to growth areas and markets

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1 Conserve and enhance biodiversity	A concentration of sites would lead to disturbance in the short term but could also create a comprehensive network of linked habitats when the sites are restored in the long term.	There may be issues as to the cumulative impact of developments in a central area.	-	0	++	A focussed strategy would be likely to encourage minerals sites near the growth areas in the county. NB The sand and gravel market is focussed on development areas as opposed to coal, hard rock and building stone which tend to be in more remote areas.	The site selection process should seek to link habitats and species through restoration proposals. Enhancement could include achieving BAP targets. It is important that impact, enhancement and mitigation are taken in to account at site allocation and planning application stage. Care should be taken to preserve the 18 Local Nature Reserves (LNRs), one site of International Importance, the Ensor's Pool Special Area Conservation (SAC), 8 Country Parks, 62 Sites of Special Scientific Interest (SSSI) and part of the Cotswold Area of Outstanding Natural Beauty (AONB).
2 Protect and improve water resources	Large scale development may be able to contribute to the protection and improvement of water resources with larger scale projects.	This option may have a greater effect on water resources than sites at dispersed locations because some are larger scale developments and they are also likely to be closer to larger populations.	0	+	+	Focused development in particular areas would be more likely to encourage investment.	Continued monitoring will be required to ensure water resources are not compromised, in particular the Avon and Tame catchments.
3 Avoid, reduce and manage flood risk	Large scale development may be able to contribute to flood risk reduction near large urban areas.	Without adequate safeguards it is possible that it is possible minerals operations could make flooding worse.	0	+	+	The SFRA Sequential Test could help to site development in low flood risk areas to mitigate against the negative effects of flooding. Where there is proven potential to alleviate flooding, quarry extensions could contribute to the flood protection of an area over the long term.	Sites would be diligently chosen with respect to their potential impacts on the environment including flood risk, population and economy. The region is particularly prone to flooding, so diligent site selection is key to minimising the risk. The scope of the option means that there is a limited number of sites to consider.
4 To safeguard environmental quality	Where there are several sites close to one another the environmental issues are likely to be highlighted	A concentration of sites could lead to disturbance in the short term if there are not adequate safeguards in place. Cumulative impact of several	0	+	+	The remote location of sites could impact upon environmental quality due to pollution, noise and dust from	The design of the development and the working practices would have to comply with set regulations in place to prevent damage to the environment. Sites would be diligently chosen to help safeguard environmental quality as much as possible.

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			S T	M T	L T			
	and there is also likely to be more pressure for mitigation measures to be made.	sites close together could be a problem without mitigation.				more traffic movements. The negative effects from creating new development would only be experienced at existing locations.	Consultation with professional bodies such as the Environment Agency will also play a part in safeguarding environmental quality.	
5	To minimise potential impacts upon community health.	Minerals development is likely to be focussed close to the main areas of population in the county. The cumulative impact of development in some areas	The cumulative impact of development in some areas may be unacceptable. A focussed approach could lead to a few communities having all the development while the rest of the county have very little.	0	+	+	Minerals can impact on community health where it causes a nuisance ie by noise dust vibration and loss of visual amenity.	Consultation with a wide range of stakeholders will seek to incorporate concerns that the public may have. It is key that new sites do not jeopardise community health; Warwickshire compares favourably with England and Wales in this respect.
6	To conserve and enhance the character and quality of the County's landscape and townscapes	In the longer term landscape quality could be improved along with other benefits such as an increase in biodiversity.	A concentration of sites close to the county's growth areas would lead to disturbance in the short term.	-	+	++	It depends to a large degree whether the areas containing the most minerals are the most attractive areas in landscape terms.	Where minerals extraction takes place there will always be potential to mould the finished scheme to the best type of restoration scheme for the area ie to link areas of wetland nature conservation habitat.
7	Preserve and enhance sites, features and areas of historic, archaeological or architectural importance, and their settings	There could be archaeological opportunities on a large scale such as comprehensive networks of features in close proximity to each other.	Conversely there is the possibility that that some archaeological features could be lost on a large scale if adequate safeguards are not in place.	0	+	+	It must be noted that when archaeological features are lost they can never be restored. Where there are new quarry locations it is likely to be advantageous for new archaeological discoveries which will increase the knowledge of the area.	Consultation with bodies such as English Heritage and other groups will help to preserve Warwickshire's historic, archaeological and architectural assets. Through the application of archaeological guidance set out in PPG15 quarry operators will have to fully assess any site's potential prior to development.
8	Protect soil resources	Soil protection and safeguard measures should be in place prior to prevent	There could be potential negative impacts on soil resources at existing mineral sites as a result of	-	0	+	Likely that soil resources will not be impacted in the short term, however there may be the	There is an opportunity to diversify waste management facilities thereby placing less reliance on landfill and over time improving soil resources.

Spatial Option 3 – New sites and extensions close to growth areas and markets

SA Objective	Predicted Nature of Effect Positive	Predicted Nature of Effect Negative	Spatial Option			Commentary/ Explanation <i>Note predicted nature of effect, how, who and where it will impact, and enhancement opportunities</i>	Enhancement and mitigation	
			Net Effect (+/, +, 0,-, -/-)					
			S T	M T	L T			
	the loss of good quality soils.	additional development.				opportunity to enhance soil resources through less reliance on landfill longer term.		
9	To preserve and protect geological features and promote geological conservation	There could be opportunities for geodiversity on a larger scale such as comprehensive networks of features in close proximity to each other.	Conversely there is the possibility that that some geological features could be lost on a large scale if adequate safeguards are not in place.	0	+	+	It must be noted that when geological features are lost they can never be restored.	Regionally important Geological and Geomorphological Sites (RIGs) should be protected as far as possible. New features where significant should be retained in situ where possible.
10	To promote the delivery of energy efficiency and carbon reduction targets	Locating quarries close to growth areas and their markets, would lead to a reduction in the amount of carbon produced.	Some minerals are not always available close to their markets or growth areas. Other sustainable transport options such as water or rail should be considered.	+	+	++	The benefits from extending existing sites would have to be balanced with the traffic impacts resulting from remote locations.	A robust locational strategy linking minerals sites to their markets is the most effective method of ensuring the reduction of carbon outputs and increasing energy efficiency by reducing the distances minerals are transported. Other sustainable transport options such as water or rail should be considered.
11	Reduce consumption of natural resources	Locating minerals development focussed on growth areas is a highly sustainable strategy in terms of reduced transportation distances and use of economies of scale. It would help reduce the consumption of natural resources.	Likely that the need for additional new sites would not contribute to carbon reduction targets in the short term. Sites may be in remote locations, meaning that greater traffic movements could reduce energy efficiency and prevent carbon reduction.	+	+	++	The addition of new sites will increase the consumption of natural resources in the short term.	There should be less reliance of landfill as a means of restoring quarries. Innovative ways need to be found to ensure that minerals developments are in line with the Waste Hierarchy.
12	To promote adherence to the movement of waste up the waste hierarchy	There is potential to reduce the amount of inert waste used in quarry restorations which would help the movement up the waste	In some cases landfill may be the only option. In which case the particular scheme would be less sustainable but justified in practical terms.	+	+	+	There should be less reliance of landfill as a means of restoring quarries. Other uses could be encouraged or where landfilling is the best option look at ways	Incentives need to encourage the timely movement of waste up the waste hierarchy. Innovative ways need to be found to ensure that minerals developments are in line with the Waste Hierarchy

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			Net Effect (+/, +, 0,-, -/-)					
			S T	M T	L T			
	hierarchy.					of reducing the amounts required for instance by restoring land at lower than existing levels.		
13	Enfranchise the community in improving the local environment	A smaller number of more central sites near larger communities and proposed growth areas may encourage the community voice to become more focussed.	Communities near existing sites already have a voice through the liaison committees.	+	+	+	Liaison Groups are the main way in which the operator and general public can inform each other about particular concerns about quarry working in their area.	It is important that the local community are consulted at the earliest possible stage to ensure that they have a forum where their concerns can be aired and taken on board. Conditions for setting up liaison groups should be attached to newly approved planning applications.
14	Improve accessibility to waste management services and facilities	There is scope to ensure that mineral extensions are located close to major transport routes as part of the chosen Preferred Option. Where this is achieved there is also potential for waste facilities to be located in tandem.	In some cases it may not be possible to locate quarries in the most accessible locations ie where there is building stone – as minerals can only be dug where they exist. It may not be appropriate to co-locate waste facilities in these locations. Waste developments in existing quarries can sometimes drag out the timescale of the restoration period.	+	+	++	Siting of mineral developments in central locations will lead to shorter traffic movements to the marketplace. This is a highly sustainable strategy when also linked in with waste operations.	Where waste recycling is an integral part of the proposed element of a quarry there should be safeguards at every stage to ensure that local amenity is protected.
15	To ensure that the waste industry plays a central role in the sustainable economic development of Warwickshire	Economies of scale through utilising existing infrastructure could be achieved by locating quarries in the central area of the county where the majority of new development should take place. There is scope for some waste facilities to be	Where there are a number of sites in close proximity the cumulative impact of all development needs to be assessed.	+	+	++	The economies of scale and employment opportunities achieved over the long term would outweigh the transport costs and impacts incurred over the longer term.	Opportunities to utilise more sustainable forms of transport (e.g. rail, canal etc.) should be investigated. The locational strategy should enable that where road transportation is necessary, access on to the main road network should be a priority.

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			Net Effect (+/, +, 0,-, -/-)					
			S T	M T	L T			
	located on minerals sites without adversely affecting communities. The option would also create employment opportunities.							
16	To explore linkages between the waste and minerals sectors	Economies of scale through utilising existing infrastructure could be achieved by locating quarries in the central area of the county where the majority of new development should take place. There is scope for some waste facilities to be located on minerals sites without adversely affecting communities.	Where there are a number of sites in close proximity the cumulative impact of all the development needs to be assessed.	+	+	++	Siting of mineral developments in central locations will lead to shorter traffic movements to the marketplace. This is a highly sustainable strategy when also linked in with waste operations. Benefits from co-location would outweigh the localised environmental or social impacts over the long term.	In order to exploit and enhance the linkages between mineral and waste sectors, there will have to be close alignment between minerals and waste strategies.
17	To encourage waste operators to explore new and innovative environmental technologies.	The Spatial Option would enable the waste and minerals industry to explore new technologies through economies of scale.	There are no negative effects identified at this stage.	+	+	++	Location close to communities could force better practice in terms of design and operations. Many of the waste sites in the county are close to existing mineral operations.	Ensure environmental technologies used are kept in line with advancements in cleaner technology in the long term.