

5 Assessment Methodology

5.1 SEA Environmental Assessment Stages

This section sets out the framework and methodology for assessing the environmental effects of the MIR. The SEA assesses the proposed MIR vision and its reasonable alternatives along with the preferred options for policy development and their alternatives, to ensure the environment is fully considered throughout the decision making process. This Environmental Report sets out how the SEA process has influenced, and been influenced by, the development of the MIR.

The steps for carrying out the assessments are detailed in this chapter with Figure 5-1 displaying the process involved. Several stages specified in Figure 5-1 will be re-visited at a later stage in the plan-making process as the LDP progresses.

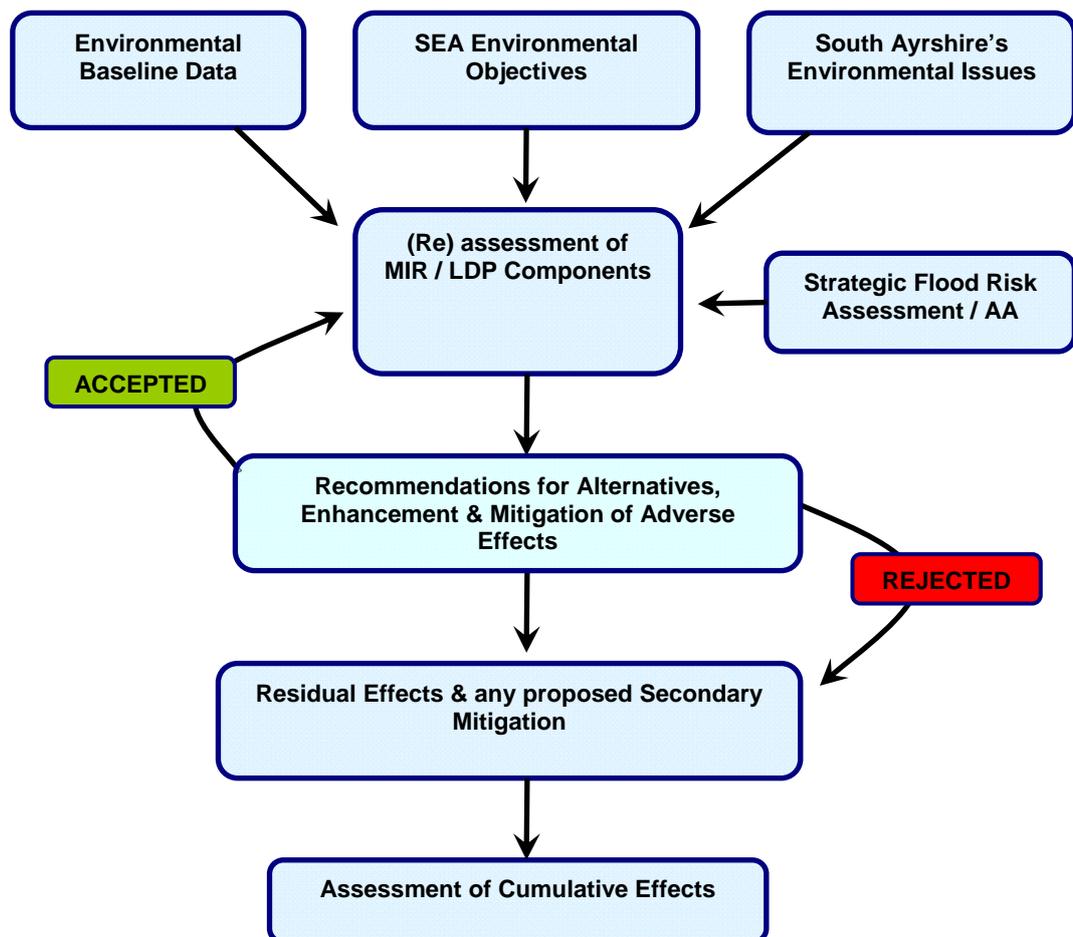


Figure 5-1: Stages of Environmental Assessment

The SEA will also recognise guidance provided in a variety of documents including:

- Scottish Government (2006), ‘Strategic Environmental Assessment Tool Kit (and templates)’;
- Scottish Government (2003); ‘Environmental Assessment of Development Plans’;
- ODPM (2005), ‘A Practical Guide to the Strategic Environmental Assessment Directive’;
- Department of Health (2007), ‘Draft Guidance on Health in Strategic Environmental Assessment’;
- Environment Agency (2007), ‘Strategic Environmental Assessment and Climate Change’;
- Countryside Council for Wales, English Nature, Environment Agency, RSPB (2004), ‘Strategic Environmental Assessment and Biodiversity: Guidance for Practitioners’; and,
- SNIFFER (2008), ‘Consultation Draft Air, Water and Soil Strategic Environmental Assessment Guidance’.

5.2 SEA Objectives

As identified in Chapter 4, SEA objectives were developed progressively through Scoping and modified through consultation. The corresponding questions were drawn up to focus the environmental assessment on the most relevant issues in South Ayrshire. The Scoping Report was submitted to the Consultation Authorities on the 31st August 2009 with responses received on the 05th October 2009 (see Appendix B). Responses confirmed that all of the proposed SEA topics would be scoped in for the purposes of this assessment.

The SEA objectives and associated questions cover a wide range of environmental issues and describe a set of desired outcomes. These assess what effect the MIR may have on the current baseline of South Ayrshire and if the MIR will exacerbate, neutralise or improve environmental issues and problems associated with the region. Table 5-1 outlines the SEA objectives and their corresponding questions.

Table 5-1: SEA Objectives and Associated Questions

Topic	No.	SEA Objective	SEA Associated Questions
Biodiversity	1	Ensure that the integrity of all internationally designated sites within or in close proximity to the South Ayrshire Council (SAC) area is preserved.	Could the policy/proposal have a direct or indirect effect on Natura 2000 sites?
	2	Safeguard national and local designated sites and habitats (particularly hedgerows and woodland) from loss and / or fragmentation.	Could the policy/proposal have a beneficial or adverse effect on issues of habitat loss, fragmentation and disturbance?
	3	Biodiversity should be enhanced & protected in line with Local Biodiversity Action Plan (LBAP) targets including protection of European protected and priority species from loss and / or fragmentation.	Could the policy/proposal have a direct or indirect impact on designated biodiversity sites, habitats, European protected or priority species including those within the LBAP?

Topic	No.	SEA Objective	SEA Associated Questions
Cultural Heritage	1	Safeguard cultural heritage features and their settings through responsible design and positioning of development.	Could the policy/proposal affect any features designated for their cultural heritage value such as Scheduled Monuments, Listed Buildings, conservation areas or any Archaeological Consultation Trigger Sites?
Water	1	Protect, and where necessary, enhance water quality to good chemical & ecological status by 2015 in line with the Water Framework Directive (WFD).	Could the policy/proposal have a beneficial or adverse effect on water quality? Could the policy/proposal help to achieve the WFD target of all waters having "Good" quality by 2015?
	2	Avoid areas of flood risk in the first instance and then ensure mitigation against any potential flood risk from new development.	Does the policy/proposal avoid areas of potential flood risk through appropriate siting of development?
	3	Ensure that all new infrastructure is designed in such a way that it reduces flood risk through the provision of Sustainable Urban Drainage Systems (SUDS).	
Soils & Geology	1	The MIR should promote use of vacant & derelict brownfield land over that of greenbelt.	Does the policy/proposal utilise or encourage use of vacant and derelict land?
	2	Safeguard areas of prime agricultural land and designated geological sites.	Could the policy/proposal have a negative or beneficial effect on protected/valued geological resources? Does the policy/proposal impact on agricultural land or designated geological sites?
Landscape	1	Protect and enhance the area's landscape character and designated Scenic Areas.	Could the policy/proposal have a beneficial or adverse effect on designated Scenic Areas or the landscape character of an area?
	2	Maintain and protect greenbelt areas in South Ayrshire.	Will there be any land take for greenbelt areas as a result of the policy/proposal?
Air Quality	1	Promote development in such a way that avoids air quality standards being breached within SAC and adjoining areas.	Could air quality within South Ayrshire be affected by the policy or proposal?
	2	Promote development in such a way as to alleviate air quality issues in those areas where air quality standards may be breached.	Will the policy/proposal result in the exceedance of any of the National Air Quality Standards? Could the policy result in increased or decreased exposure to air pollution?
Climatic Factors	1	Contribute towards the reduction of greenhouse gas emissions in line with Scottish Government targets of 80% by 2050 with interim targets of 34% by 2020 and 18% by 2013.	Could the policy/proposal make a positive contribution towards meeting national and local climate change targets through appropriate siting and design of development such as energy efficient housing and reduced need to travel?
	2	Promote development resilient to the effects of climate change.	

Topic	No.	SEA Objective	SEA Associated Questions
	3	The MIR should promote the use of renewable energy, energy efficient development & increased use of public transport.	Does the policy/proposal make a positive contribute towards renewable energy targets?
Noise	1	The MIR should avoid where possible the positioning of residential properties within areas with a noise level exceeding Noise Exposure Category C.	Is the policy/proposal within close proximity to noise sensitive receptors and could the proposal result in increased noise levels?
	2	The MIR needs to establish & protect quiet areas, & avoid deterioration in the noise regime in noise sensitive areas.	Will any environmentally sensitive areas be impacted upon as a result of development?
Human Health	1	To enhance and protect human health & also promote healthy living through improved active travel opportunities, particularly the quality of and availability to walk & cycle.	Will the policy/proposal encourage walking and cycling rates, bringing them in line with the national average? Does the policy/proposal facilitate healthy lifestyles and address safety concerns which may have health effects both physically and mentally, e.g. due to noise and flooding?
	2	Maintain and improve recreational facilities and promote access to health, social and recreational facilities.	Does the policy/proposal include development appropriately sited for access to health social & recreational facilities & open space?
Population	1	Improve the community environment & quality of life of residents.	Could the policy/proposal enhance the community environment & improve quality of life?
	2	Maintain or enhance sustainable access to key services, amenities & employment particularly for rural communities.	Does the policy/proposal promote sustainable access to essential services and employment opportunities?
	3	Promote economic growth to encourage retention of working age population.	Does the policy/proposal promote economic growth through encouraging new business?
Material Assets	1	The LDP should ensure that areas important for the production of materials for construction and energy generation are protected from development.	Could the policy/proposal promote sustainable design and construction?
	2	Promote sustainable and efficient use of natural resources in the construction of existing and future developments.	Does the policy/proposal have the potential to promote reuse and recycle of waste in the construction of new developments?
	3	Ensure that waste management in South Ayrshire is based on the principles of reduce, reuse and recycle, as set out in the Area Waste Plan Best Practical Environmental Option (BPEO).	Could the policy/proposal make a positive contribution towards achieving all European, national, regional and local waste reduction & recycling targets? Would the policy/proposal minimise the production of waste for any new development?
	4	Ensure there is adequate sewerage and drainage infrastructure in place to support new development.	Does the policy / proposal allow for connection to public sewerage and waste water drainage systems?

5.3 Environmental Assessment

A major part of the SEA process is the assessment of the likely significant effects of the MIR including the preferred vision and alternative options as well as preferred options for policy development and their alternatives. The assessment is guided by the environmental objectives and analytical questions, as shown in Section 5.2, and the environmental baseline (Appendix C), along with identified environmental issues and threats.

As defined by Glasson *et al* (2005), the environmental effects of a Plan can be considered to be:

‘...those resultant changes in the environmental parameters in space and time compared with what would happen should the Plan not be implemented.’

The environmental assessment methodology involves the identification of the type (i.e. beneficial, negligible or adverse) and significance of effect.

Significance is a function of the magnitude of an environmental effect combined with the sensitivity or importance of the environmental receptor. The significance of effects is assessed during the assessment process using the methodology within Table 5-2. The definition of significance within this table has been adapted from the SEA guidance as listed in Section 5.1.

Table 5-2: Significance of Effect

Significance	Effects
Major Adverse Effects	<p>The action is very likely to lead to significant or severe damage or loss or a series of short term adverse effects leading to large scale and permanent negative effects e.g. reduced air quality requiring an AQMA to be designated with secondary, indirect effects to other SEA topics such as human health.</p> <p>The action or proposed development is likely to result in moderate damage or loss to an internationally designated site leading to an overall major adverse effect.</p> <p>The PPS or development could moderately compromise the character of multiple regionally or nationally important sites.</p>
Moderate Adverse Effects	<p>The PPS has the potential for severe adverse effects (e.g. fundamental impairment of the integrity of) on a locally important site.</p> <p>The action has the potential to have a moderate adverse effect on the setting of a nationally important site but does not affect the overall integrity of that site.</p> <p>The action could have a moderate adverse effect on an environmental standard, benchmark or issue considered important at the regional level.</p> <p>The action could have moderate adverse effect on a regionally important site or issue.</p> <p>Action is likely to lead to moderate damage or loss or a series of short term adverse effects leading to large scale and permanent effects e.g. to levels of soil contamination.</p>
Minor Adverse Effects	<p>Action is likely to lead to minor damage or loss or a series of short term adverse effects leading to large scale and permanent effects e.g. to levels of soil contamination.</p> <p>The PPS or development could have minor or moderate effects to a locally important site or issue.</p> <p>The PPS or development could have minor effects on a regionally important site.</p>

Significance	Effects
Uncertain Adverse Effects	Effects are considered adverse however, for reasons including insufficient information, it is difficult to ascertain with any certainty, the extent of effect.
Negligible	A development that is unlikely to have any significant effect on the environmental quality of a site, standard, benchmark or issue.
Mixed Effects	Effect is likely to be a combination of beneficial and adverse, particularly where effects are considered on sub-issues or areas.
Uncertain Effects	Effect of action is not known or too unpredictable to assign a conclusive score.
Uncertain Benefits	Effects are considered beneficial however, for reasons including insufficient information, it is difficult to ascertain with any certainty, the extent of the effect.
Minor Benefits	<p>The action would likely lead to a minor improvement in both the short and long term, leading to large scale, temporary or small scale permanent benefits e.g. for water, WFD targets may be met or exceeded in a small area.</p> <p>The PPS or development would facilitate the minor restoration or enhancement of a locally or regionally valued important site.</p>
Moderate Benefits	<p>The action would likely lead to a moderate improvement in both the short and long term, leading to large scale, temporary or medium scale permanent benefits.</p> <p>The PPS or development would moderately benefit an area that presently fails to meet national or regional standards or benchmarks to meet those standards in the future.</p> <p>The PPS or development would facilitate the moderate restoration or the enhancement of a site at of regional value.</p> <p>The action would facilitate the minor restoration or the enhancement of a site at of national or international value.</p>
Major Benefits	<p>The action is likely to lead to an overall large improvement, major restoration, a new international designation or series of smaller improvements e.g. to water quality with WFD targets met or exceeded on a large scale in the Plan area.</p> <p>The action would significantly benefit an area that presently fails to meet international standards to a point that that it may meet those standards in the future.</p>

When considering significance, a precautionary approach has been taken. In the instance that an effect of two differing magnitudes is recorded, the overall assessment of that effect is taken as the greater magnitude of the two.

The assessment has also considered and described effects in terms of the period over which they could occur (i.e. short or long term), the spatial scale (international, national or local) and whether the effect would have a direct or indirect influence (for example, a direct adverse effect on water quality could have indirect implications for human health). A brief definition of these types of effects is displayed below.

Temporality: Short term effects are identified where they are transient in nature. Long-term effects are those that are expected to last over the life span of the LDP.

Spatial Scale: Effects can act over a range of spatial scales from small scale localised effects to large scale, national effects. In terms of this assessment, local effects are considered to be those that would affect a local community or town – for example, the environment in Ayr; regional effects would be those having the potential to have an effect over most of South Ayrshire; and national effects would be those covering the whole of Scotland.

In some instances there was an element of uncertainty, either because there was insufficient information available, limited understanding about the likely effects or environmental resource or because the effect was seen to be largely dependant on the detailed design issues.

The environmental assessment process has been undertaken through a peer review, utilising professional judgement and, where appropriate, GIS mapping to inform decision making. In addition, best practice guidance is acknowledged. Results of the environmental assessment are displaced within the matrix in Appendix E of this Report (an example of which is shown in Table 5-3) and a written summary of findings can be found in Chapter 6.

A simple colour code and symbol scheme was used to display the significance of the effect in the matrix (see Table 5-3), with evidence presented to justify the effect in the summary section.

Table 5-3: Example Assessment Matrix

SEA Objectives	Significance	Summary
EXAMPLE: Development proposal relating to Ayr		
Biodiversity, Flora & Fauna	? / -	(Justification text inserted for each SEA Topic)
Cultural Heritage	?	
Water	-	
Soils and Geology	? / +	
Landscape	+	
Air Quality	0	
Climatic Factors	0	
Noise	+ / -	
Human Health	+	
Population	+	
Material Assets	0	
Summary	? / +	Inter – relationship between the SEA topics.
Proposed Mitigation	Reduction of adverse effects or recommendations for enhancement of benefits.	

Key:

Major Benefit:	+++	Major Adverse:	---
Moderate Benefit:	++	Moderate Adverse:	--
Minor Benefit:	+	Minor Adverse:	-
Negligible	0	Uncertain:	?
Uncertain Benefit:	? / +	Uncertain Adverse:	? / -
Mixed Effects:	+ / -		

5.4 Compatibility Assessment

5.4.1 Preferred Vision Option and Alternatives

Preferred alternatives are a statutory requirement in the MIR. These have emerged through extensive consultation with politicians, consultees, developers, other professionals and communities early in the plan-making process. It is important to establish preferred and alternative strategies for the LDP in order to focus consultation and engage stakeholders in the plan process in a meaningful way and at an early stage.

The MIR appraises options for a strategic vision for the LDP, setting out the preferred vision alongside its reasonable alternatives. A compatibility assessment was conducted on the preferred and alternative options for the vision with the results summarised in Chapter 6 and recorded in a matrix in Appendix E of this report.

The preferred vision and alternative options were compared against each individual SEA objective with respect to their perceived compatibility and results recorded in a matrix. All SEA objectives per environmental media were assigned a number that was then used to identify each objective within the matrix to ensure ease of use, both during the assessment and for any interested party viewing the matrix.

The compatibility assessment matrix used a tick to represent compatibility, a cross where there was incompatibility and a question mark where there was uncertainty as to the compatibility. Where there was potential compatibility, this was recorded using a question mark and a tick, whilst conversely, potential incompatibility was represented by a question mark and a cross.

Where it was deemed that enhancements could be made to the preferred vision and its alternatives, these were put forward and re-assessed as to their compatibility with the SEA objectives. The Council was then consulted as to whether these changes would be taken on board.

5.4.2 Land Assessment Framework

A Land Assessment Framework (LAF) was drawn up to enable the Council to conduct a vigorous and robust assessment of the suitability of land for development within South Ayrshire.

Potential development sites were identified in two ways. The Council undertook a call for sites, so that developers, land owners and any interested party could promote a site for development. This yielded in excess of 150 potential development sites which were then assessed under a 'Call for Sites' matrix. In addition to this, it was recognised that the most pressure on land for development is around Ayr, Prestwick and Troon. The Council therefore undertook an additional appraisal of all land surrounding these towns by applying the LAF to parcels of land within these areas. These are displayed within a matrix in the MIR.

The results of the LAF aimed to provide an information base from which to identify favoured locations for development by scoring different factors against a wide range of development constraints. The process identified whether land was severely constrained and therefore unlikely to be suitable for development, constrained but with mitigation could be developed and unconstrained sites, potentially suitable for development.

Each site and land parcel was assessed against 25 constraints and awarded a score ranging from 0 to -2. A compatibility assessment was conducted on each of these constraints to establish if they were compatible with the SEA objectives, the results of which are displayed in Chapter 6, Section 6.2.3 and Appendix E.

The results of the LAF have been displayed on a map using a RAG (Red, Amber, Green) analysis in which significantly or severely constrained sites without potential for mitigation are identified as red, constrained sites offering potential for development subject to mitigation are amber in colour and those sites which are unconstrained are identified as green. The maps are also accompanied by matrices which show how each site has scored against any given constraint.

The SEA environmental assessment has run alongside the development of the spatial strategy within the MIR and emerging LDP and has had significant input at each stage including meetings and consultations with the Local Plan Team to advise on environmental issues and update the SEA team with their progress.

The results of the LAF represent not only the Council's assessment of constraints for site selection, but also the results of the SEA environmental assessment. This provided a robust and alternative approach to assessing preferred sites to be taken forward into the LDP and should reduce the need for further environmental assessments as the LDP develops.

A summary of the findings of this RAG analysis is displayed in Chapter 6, Section 6.3.

5.5 Environmental Assessment

5.5.1 Policy Options and their Reasonable Alternatives

An environmental assessment of the MIR policy options and their alternatives was undertaken against the SEA objectives. The assessment utilised the environmental baseline and current environmental issues to guide the process as outlined in Figure 5-1.

The methodology for assessments included the identification of the type of effect (beneficial, adverse, uncertain or mixed), their significance (minor, moderate, major or uncertain) and spatial scale (international, national, regional or local). It also considered whether the effect was long or short term and if the policy would have an anticipated indirect or direct effect. The significance criteria are displayed in Table 5-2, with an example assessment matrix shown in Table 5-3.

The assessment provided alternatives and mitigation measures to reduce adverse effects or enhance benefits to the environment where appropriate and these were put forward to SAC for their consideration. The results of the assessment can be seen in the following chapter, Chapter 6, Section 6.4.

Once SAC had provided a response to the recommendations proposed, the residual effects were drawn out of the assessments and taken forward into the cumulative assessment as detailed in Sections 5.6 and 5.7.

5.6 Mitigation and Residual Effects

Where appropriate and achievable, the environmental assessment made recommendations, identified mitigation measures and / or propose further alternatives to the MIR options in order to reduce potential adverse effects or enhance those of a beneficial nature. This process informs and potentially refines the components of the MIR to reduce any significant effects on the environment.

Mitigation measures proposed follow the mitigation hierarchy: avoid; reduce; remedy; or compensate for adverse effects and enhance where appropriate for beneficial effects.

Remaining residual environmental effects, both beneficial and adverse, were then identified following the consideration of recommendations and mitigation measures and these residual effects were then taken forward to the cumulative assessment process.

5.7 Cumulative Effects Assessment

Schedule 3 of the Environmental Assessment (Scotland) Act 2005 requires the consideration of secondary, cumulative and synergistic effects. The cumulative effects assessment identifies, describes and evaluates residual cumulative effects (including synergistic and secondary effects) on the environmental in order for them to be avoided, minimised or enhanced as appropriate.

The residual effects identified from the environmental assessment of the policy options were taken forward and considered in the cumulative effects assessment. The matrix, as illustrated in Appendix F of this Report, details the potential arising cumulative effects.

There are a number of potential outcomes arising from cumulative effects assessment including:

Secondary: Effects that are not a direct result of the MIR but occur away from the original effect, or as a result of a complex pathway. An example of a secondary cumulative effect would be the unsustainable planning of development in sensitive wetland areas causing further secondary development activities such as road building which increases pressure on the aquatic environment;

Additive: These are effects that arise for instance, where several developments each have insignificant effects, but together are more significant. For example, incremental soil sealing in urban and rural areas due to development pressures;

Neutralising: In essence, these effects 'neutralise' each other in that they counteract each other to reduce overall effect; and

Synergistic: Effects interact to produce a greater effect than the sum of individual effects so that the nature of the final impact is different to the nature of the individual impacts. An example of such an impact would be vegetation removal, soil sealing and soil compaction that may together cause an increase in surface runoff and erosion of soils resulting in an adverse synergistic effect on aquatic ecosystems. This would occur as a result of increased sediment loading or silting if the sediment-rich runoff entered water bodies.

The cumulative effects assessment has been based on the SEA environmental parameters, with cumulative effects on individual receptors identified where

possible. The inter-relationship between the environmental parameters is also considered and effects reported on a parameter basis, taking into account any mitigation that has been put forward and accepted for incorporation into the MIR.

5.7.1 Cumulative Effects of Potential Development Sites / Land Parcels

Cumulative effects of potential development sites were identified in the MIR as part of an analysis of the results of the Land Assessment Framework (LAF). These cumulative effects were identified by totalling the scores for each site / land parcel, and applying the RAG analysis to identify the level of significance of the impact of development.

Where a site / land parcel scored -14 or higher, it was highlighted as green; amber sites scored a total of -16 to -20; while red sites were identified as -21 or lower. This allowed for the identification of locations that would be least constrained and therefore most likely to be able to accept development without significant economic, environmental or social consequences and conversely what locations are least suited to accommodating new development.

5.8 Other Environmental Assessments

5.8.1 Appropriate Assessment

In accordance with Article 6(3) of the Habitats Directive (92/43/EEC), the competent national authorities must agree to a plan or project only after having ascertained that it will not adversely affect the integrity of Natura 2000 sites. The MIR must therefore be subject to a screening process to determine if the measures proposed would have a likely significant effect on one or more European sites.

The purpose of the Appropriate Assessment (AA) is to assess the impacts of a plan or project, in combination with the effects of other plans and projects, against the conservation objectives of a European site and to ascertain whether it would adversely affect the integrity of that site.

Where significant effects are identified, alternative options or mitigation measures should be examined to avoid any potentially damaging effects. Results of the screening assessment determine whether further AA is required. The AA should be developed alongside the plan-making process and further refined as appropriate.

5.8.2 Strategic Flood Risk Assessment

A Strategic Flood Risk Assessment (SFRA) provides a strategic overview of flood risk. It is designed for the purposes of informing the development planning process and involves the collection, analysis and presentation of all existing and readily available flood risk information for the area of interest.

Consultation with SEPA on the Scoping Report (Appendix B) highlighted that it was important to carry out an assessment of flood risk early in the plan making process to make it easier to introduce and promote the primary principle of avoidance. It was also considered appropriate to consult with other local authorities to ensure of a strategic approach to flood risk assessment as proposals in adjacent local authority areas could affect flooding in the South Ayrshire Council area and visa versa.

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