

## 15. Cumulative Effects

### 15.1. Introduction

15.1.1. The Environmental Impact Assessment regulations require the assessment of cumulative effects. This chapter considers cumulative effects in accordance with DMRB, Volume 11, Section 2, Part 5: Assessment and Management of Environmental Effects and Interim Advice Note 125/09 Supplementary guidance for users of DMRB Volume 11 'Environmental Assessment'

15.1.2. Cumulative effects comprise the combined effects of reasonably foreseeable human induced changes within a specific geographical area on receptors and over a certain period of time and can be both direct and indirect. Assessment of the significance of cumulative effects needs to be undertaken in the context of the characteristics of the existing environment.

15.1.3. In EIA, there are two main categories into which impacts can be divided:

- Cumulative effects from a single project: impact arising from the combined action of a number of different environmental topics – specific impacts upon a single receptor/resource.
- Cumulative effects from different developments in the area (in combination with the scheme being assessed): impact may arise from the combined action of a number of different projects, in combination with the project being assessed, on a single receptor/resource. This can include multiple impacts of the same or similar type from a number of projects upon the same receptor/resource.

15.1.4. According to the Guidelines for the Assessment of Indirect and Cumulative effects and Impact Interactions (May 1999), cumulative effects are defined as:

*'Impacts that result from incremental changes caused by other past, present, or reasonably foreseeable action together with the project'*. For example:

- Incremental noise from a number of separate developments;
- Combined effect of individual impacts, e.g. noise, dust and visual, from one development on a particular receptor; and;
- Several developments with insignificant impacts individually but which together have a cumulative effect.

15.1.5. The DMRB Volume 11, Section 2, Part 7 (HA218/08) provides the same definition of cumulative effects as above.

15.1.6. For the purpose of DMRB Volume 11 Guidance, a cumulative effect may arise as a result of:

- The combined impact of a number of different environmental topic-specific impacts from the proposed scheme on a single receptor/resource; and
- The combined impact of a number of different projects within the vicinity (in combination with the proposed scheme) on a single receptor/resource.

## 15.2. Determining Significance of Cumulative Effects

- 15.2.1. The impacts arising from a single development upon a single receptor/resource may not be considered as significant in isolation. However when these individual impacts are considered in combination, the resulting cumulative effect may be significant.
- 15.2.2. Determining significance of cumulative effects should focus on the extent to which the impacts can be accommodated by the receptor/resource.
- 15.2.3. Table 15.1 below will be used as a framework for determining significance of cumulative effects.

Table 15.1 Significance of Cumulative Effects	
Significance	Effect
Severe	Effects which the decision maker must take into account as the receptor/resource is irretrievably compromised.
Major	Effects that may become key decision making issues
Moderate	Effects that are unlikely to become issues on whether the project design should be selected, but where future work may be needed to improve on current performance.
Minor	Effects that are locally significant
Non-Significant	Effects that are beyond the current forecasting ability or are within the ability of the resource to absorb such change.

## 15.3. Cumulative Effects of Parallel Projects

- 15.3.1. It is envisaged the A77 Maybole Bypass will bring significant positive cumulative effects in terms of road and other users safety.

### Potential Development

- 15.3.2. This is a development of 13 new build homes comprising of four. 3 bedroom and nine. 2 bedroom homes. This site has been acquired through the affordable housing policy within South Ayrshire Council and is part of a larger development carried out by Lauderdale Homes. According to Ayrshire Housing<sup>88</sup> "The architect has utilised astute design to deal efficiently with the difficult topography of the site and to create an attractive and interesting street frontage whilst maximising the potential of the striking views to the south."
- 15.3.3. The development of this site commenced in May 2013 and should be complete by December 2013.
- 15.3.4. Minimal land take is required at Whitefaulds and Redbrae residential development.

<sup>88</sup> Ayrshire Housing, Burns Wynd. Accessed 20/06/2013, Available from: <http://www.ayrshirehousing.org.uk/news/2008/burns-wynd-maybole>

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- 15.3.5. There are seven sites in close proximity to the proposed scheme that have current planning applications associated with residential and commercial properties, some of which have already been completed.



Table 15.2 Cumulative Effects						
Effect	Cumulative Effect	Spatial Extent	Magnitude	Timing/Duration	Mitigation/Enhancement	Significance of Effect
<b>Air Quality</b>						
Increase in emissions arising from the traffic impacts on receptors in the vicinity of the new alignment	None	N/A	N/A	N/A	N/A	N/A
<b>Cultural Heritage</b>						
The potential of unknown buried archaeological remains	Additional loss of finite resource	Local	Unknown	Permanent	A watching brief will be carried out by an archaeologist during excavation work as a precaution to prevent damage to as yet unrecorded sites or finds of archaeological interest.	Not significant
Demolition of Kirklandhill Cottage	Additional loss of finite resource	Local	Minor	Permanent	Appropriate recording of the asset in advance of removal should be carried out	Not significant



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<b>Ecology and Nature</b>						
Part removal of a large number of hedgerows. A small amount of trees will also be lost as a result of the proposed scheme.	Cumulative loss of hedgerows important for breeding and wintering birds. Removal of these areas will remove important bird habitats.	Local	Minor	Permanent	To prevent disturbance to nesting birds, clearance works must not commence during the bird breeding season (March to August inclusive).  Replacement planting of trees and hedgerows using native and local species will replace those lost.	Minor adverse
Removal of badger sett	Removal of badger habitat	Local	Moderate	Permanent	Through consultation with SNH, an artificial sett will need to be constructed to mitigate for the loss of the sett	Minor adverse
<b>Landscape Effects</b>						
New bypass	Visual impact from new bypass	Local	Moderate	Long term 15 receptors	New planting and fencing	Minor adverse
<b>Land Use</b>						
40 ha loss of agricultural land	10 agricultural holdings affected by severance to fields	Local	Major	Long term	N/A	Major adverse



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<b>Noise and Vibration</b>						
Increase in noise to receptors	Traffic noise will contribute to high ambient noise levels	Local	Moderate	Long term	<p>Cutting with embankments specifically sculptured to negate the requirement for noise barriers.</p> <p>Low-noise road surface assists in control of noise from the tyre interaction.</p>	Moderate adverse
<b>Pedestrians, Cyclists, Equestrians and Community Effects</b>						
New roundabouts at Kirkoswald Road and B7023 Culzean Road	Pedestrians and others will need to cross the carriageway to continue their journey.	Local	Minor	Long term	<p>Existing footways have been incorporated into the bypass.</p> <p>Equestrian crossing on Culzean road</p>	Not significant

**Road Drainage and the Water Environment**



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Effect	Cumulative Effect	Spatial Extent	Magnitude	Timing/Duration	Mitigation/Enhancement	Significance of Effect
Sedimentation can impact the water quality and in turn, affect the in-stream flora and fauna	None	N/A	N/A	Construction	<p>During construction adherence to CAR measure and the inclusion of a temporary drainage network strategy will mitigate construction impacts in relation to sedimentation.</p> <p>The installation of treatment ponds will mitigate the impact of the scheme in this regard.</p>	Not significant
				Long Term	<p>Post construction, the installation of treatment ponds will mitigate the impact of the scheme in this regard.</p> <p>In relation to Groundwater there is to be no direct surface water run-off discharge during construction</p>	
<b>Geology and Soils</b>						



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Effect	Cumulative Effect	Spatial Extent	Magnitude	Timing/Duration	Mitigation/Enhancement	Significance of Effect
The earthworks proposals include a number of embankments and cuttings at designated locations along the route	Loss in land	Local on-site	Moderate	Construction	Soils will be stripped and set aside for re-use will be stockpiled in a controlled manner	Not significant
Permanent excavations are proposed for road cuttings, and temporary excavations for the construction of foundations, culverts, and other structures.	Loss in land	Local on-site	Moderate	Construction	Site-won topsoil and subsoil would generally be retained on site and re-used in the scheme landscape works were required.	Not significant
Site users & neighbours	Ingestions, inhalation or direct contact with contaminated soils	Local	Moderate	Construction	Completed stockpiles are cordoned off with secure fencing to prevent any disturbance or contamination by other construction activities.	Not significant